

27 March 2013

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Enforcement Compliance and Assurance Branch  
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Reference: Interim Remedial Measures Buffer Zone Report  
DuPont East Chicago Site  
East Chicago, Indiana

Dear Mr. Bardo:

On behalf of our client, E. I. du Pont de Nemours and Company (DuPont), and as a part of the on-going Resource Conservation and Recovery Act (RCRA) Corrective Action Program, Parsons has performed an Interim Remedial measures action on over 20 acres of the DuPont East Chicago Site, East Chicago Indiana. The result of this removal is presented in the Interim Remedial Measures Buffer Zone Area Completion Report and represents the current condition of this area. This hardcopy report is included in the package and on the enclosed CD-ROM, which also include all appendices.

Please contact the DuPont project manager, Mr. Sathya Yalvigi (302-999-2764; [Sathya.V.Yalvigi@USA.dupont.com](mailto:Sathya.V.Yalvigi@USA.dupont.com)) or myself (512-719-6006), if you have any questions or comments.

Sincerely,



Randy Palachek,

Project Manager

Enclosure

Cc: Sathya Yalvifi, DuPont



**INTERIM REMEDIAL MEASURES  
BUFFER ZONE AREA  
COMPLETION REPORT  
DUPONT EAST CHICAGO SITE  
EAST CHICAGO, INDIANA**

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March 2013

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## ACRONYMS

<b>Acronym</b>	<b>Definition / Description</b>
Cardno	Cardno JF New
COPC	Constituent of potential concern
C-O-C	Chain-of-custody
CRG	Corporate Remediation Group
DuPont	E. I. du Pont de Nemours and Company
HASP	Health and Safety Plan
IRM	Interim Remedial Measure
Mg/kg	Milligram per kilogram
mg/L	Milligram per liter
mg/m <sup>3</sup>	Milligram per cubic meter
RCRA	Resource Conservation and Recovery Act
Summit	Summit Environmental Services
TCLP	Toxicity Characteristic Leaching Procedure
TNC	The Nature Conservancy
USEPA	United States Environmental Protection Agency
XRF	X-ray fluorescence

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## 1.0 INTRODUCTION

Parsons conducted Interim Remedial Measures (IRM) activities at the E. I. du Pont de Nemours and Company (DuPont) site in East Chicago, Indiana (East Chicago Site or Site) from September 2012 to December 2012. These activities were conducted on behalf of DuPont, as a part of the on-going Resource Conservation and Recovery Act (RCRA) Corrective Action Program at the Site. Work was performed in accordance with the Buffer Zone IRM Soil Management and Sampling Technical Memorandum dated August 2012, United States Environmental Protection Agency (USEPA) comments dated June 2012, and Field Sampling Plan dated September 2012. The data collection was completed in accordance with the Hazardous and Solid Waste Amendments portion of the RCRA corrective action order.

DuPont operations were discontinued at the 410-acre East Chicago Site in 1986. During production, the western developed area was used mainly for manufacturing purposes, while the northwest and central sections were used as waste management areas. Most of the previously active manufacturing areas have been decommissioned, and the production facilities have been removed. WR Grace & Co. operates a small facility on the western edge of the Site via a long-term lease from DuPont. The eastern portion of the Site, measuring approximately 163 acres, was not developed and retained its original plains/dunes geomorphology and associated plant communities. This part of the Site is commonly referred to as the Natural Area, and is currently managed by The Nature Conservancy (TNC) for habitat preservation.

The IRM activities (as part of the larger corrective action for the site) were developed for implementation in a Buffer Zone that separates the former manufacturing and waste disposal areas from the Natural Area. The IRM objectives were to minimize potential soil contaminant migration into the sensitive habitat of the Natural Area and extend coverage of existing high-quality habitat. The IRM includes excavation of soil containing elevated levels of lead, arsenic, cadmium and zinc and confirmation soil sampling. Additional soil samples were collected between the excavations to confirm lower levels exist in the Buffer Zone once the IRM activities were completed. Air monitoring for worker and site protection was also performed in conjunction with the excavation activities.

Technical consulting services were provided by Parsons. Excavation services were provided by Summit Environmental Services (Summit) of Indianapolis, Indiana.

Specific field activities are summarized below. Field data and sampling results are provided in Tables 1 through 11 and Figures 1 through 13.

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## 2.0 PERMITTING

Prior to site mobilization the following plans and permits were developed and obtained from city, state, and federal agencies.

- Storm Water Pollution Plan (SWPP)
- Clean Water Act Section 401 Water Quality Certification
- Clean Water Act Section 404 Wetland Permit

Copies of these plans and permits are provided in Appendix A.

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### 3.0 IRM WORK PLAN AND METHODS

This section describes the IRM excavation work plan, confirmation soil sampling plan, additional buffer zone soil sampling, air monitoring, and any deviations from the plan. The Field Sampling Plan Buffer Zone IRM Soil Excavation and Management, dated September 2012, which details the sampling plan and methods, is provided in Appendix B.

#### 3.1 Site Preparation

Prior to the commencement of excavation activities, the chain-link fence that runs through the Buffer Zone was removed temporarily and vegetation in and around the proposed IRM areas (Area A through Area I) was cleared and grubbed. Up-gradient and down-gradient erosion controls were then installed at each of the IRM areas in accordance with the SWPPP. Stockpile areas were also prepared for non-hazardous soil and potentially hazardous soil. Erosion control installation services were provided by Daylight Land Management of Evansville, Indiana. The locations of IRM areas, tree/vegetation stockpile areas, soil stockpile areas, and erosion controls are provided on Figure 1.

#### 3.2 Potentially Hazardous Soil Excavation

In May 2012, Parsons and DuPont developed site-specific threshold concentrations of hazardous metals (arsenic, cadmium, and lead) in soil. These threshold concentrations were based on a statistical correlation/regression analysis of total metals versus Toxicity Characteristic Leaching Procedure (TCLP) metals concentrations previously sampled at the site. The results of the regression analysis were documented in the Buffer Zone IRM Soil Management and Sampling Technical Memorandum dated May 8, 2012. The USEPA agreed with the regression analysis and provided additional comments regarding soil management and post excavation confirmation sampling in correspondence dated June 2012. DuPont and Parsons agreed with the USEPA comments and incorporated them into the final technical memo dated August 2012 and IRM soil management and post excavation sampling plans. The site-specific concentrations of total metals that were determined to represent hazardous levels per TCLP procedures were as follows:

- Arsenic – 5,548 milligrams per kilogram (mg/kg)
- Cadmium – 235 mg/kg
- Lead – 4,606 mg/kg

Copies of the final Soil Management and Sampling Technical Memorandum dated August 2012 and the USEPA comments dated June 2012 are provided in Appendix C.

##### 3.2.1 Potentially Hazardous Soil Excavation and Confirmation Soil Sampling Plan

Based on the site-specific total metals threshold hazardous concentrations developed, 25 potentially hazardous soil areas were identified (HW-B1, HW-B2, HW-C1, HW-C2, HW-D1 through HW-D10, HW-E1 through HW-E4, HW-F1, HW-F2, HW-G1, and HW-H1 through HW-H4). These potentially hazardous excavation areas are depicted in Figure 2.

An initial 25- by 25-foot-square, 2-foot-deep excavation was completed at each potentially hazardous soil location,. Soil from each excavation was stockpiled on and

covered with plastic sheeting in the Hazardous Soil Storage Area. The location of the soil stockpile area is provided in Figure 1.

Each excavation of a potentially hazardous soil location was screened using an X-ray Fluorescence meter (XRF) in the field. The XRF was used to measure metals concentrations in each of the four excavation walls and the excavation floor.

If field results of any horizontal wall XRF measurements indicated concentrations that exceeded calculated site specific total metals (arsenic, cadmium, and lead) hazardous concentrations, the excavation was extended an additional 5 feet in the horizontal direction of the exceedance. The process was repeated until XRF measurements indicated concentrations below the site specific hazardous concentration total metals values.

XRF screening was also performed on the bottom of all potentially hazardous soil excavations. If XRF measurements on the excavation floor indicated the soil contained a total metals concentration (arsenic, cadmium, and lead) at or above the criteria, then the floor was further excavated and/or subsequently covered with 2 feet of clean backfill. Additional excavation of the bottoms extended to a maximum depth of 4 feet below grade.

When XRF measurements and best field judgment at a potentially hazardous soil excavation location indicated that all soil above the threshold levels had been removed, a confirmation composite soil sample was collected. At a minimum, the confirmation sample was comprised of a five-part composite sample containing one part from each of the four sidewalls and one part from the bottom of the excavation. In some cases, separate soil samples were submitted for sidewalls and floor. Confirmation soil samples from the potentially hazardous soil excavations were submitted under standard chain-of-custody (C-O-C) procedures to Test America Laboratories in University Park, Illinois. The samples were analyzed for total metals (arsenic, cadmium, and lead).

### **3.2.2 Potentially Hazardous Soil Excavation Deviations from Plan**

#### ***Area B***

During site preparation activities, it was discovered that Area B contained primarily rubble/debris (e.g., concrete, re-bar, bricks) fill material. It was therefore decided that the proposed IRM strategy for Area B would be reassessed. Potentially hazardous soil locations HW-B1 and HW-B2 were not excavated. The presence of rubble/debris in Area B was further confirmed with a series of test pits that are discussed in Section 9 of this report.

#### ***BFZ-43***

Additional soil samples were collected in the buffer zone between each of the IRM areas (locations BFZ-32 to BFZ-48). Laboratory analytical results for the sample collected at BFZ-43 (0-2) indicated a lead concentration (5,500 mg/kg) that was above the site-specific hazardous concentration of 4,606 mg/kg. Based on this result, an additional potentially hazardous soil excavation was conducted at BFZ-43. The excavation and confirmation sampling of HW-BFZ-43 was consistent with the plan and methods previously described in Section 3.2.1.

Details regarding buffer zone soil sampling are provided in Section 3.4.

### 3.3 Non-Hazardous Soil Excavations

The boundaries of the proposed IRM areas (Area A through Area I) were based on review of historical soil sampling (arsenic, cadmium, lead, and zinc) laboratory results. Locations of the IRM areas are provided in Figure 1.

#### 3.3.1 Non-Hazardous Soil Excavation and Confirmation Sampling Plan

Each IRM area was excavated to an initial depth of 2-feet and to the horizontal limits of the proposed IRM areas. Excavated soil was stockpiled in the Non-Hazardous Soil Stockpile Area. The location of the soil stockpile area is provided in Figure 1.

Post-excavation sampling was conducted at all excavated IRM areas to verify removal of soil contaminant sources. Soil composite samples were collected from the excavation footprint at a rate of four samples per acre.

Each soil composite sample was prepared by combining, at a minimum, five sub-samples from the excavation sidewalls and bottom to provide an area-weighted average concentration for each sample. A six-inch subsample depth was used for the excavation floor. These samples were submitted under standard C-O-C procedures to Test America Laboratories located in University Park, Illinois. The samples were analyzed for total metals (arsenic, cadmium, lead, and zinc). Figures 3 through 6 show the results of the sampling by quarter acre.

In IRM Area D, a small pond, designated as solid waste management area (SWMU) 12A, was also excavated. The pond was dewatered prior to excavation. The perimeter of the pond was excavated 10 feet outside of the existing pond boundary to a depth of 5 feet. One soil composite sample was then collected from the sidewalls and floor and analyzed for total metals (arsenic, cadmium, and lead). The pond was then backfilled with clean fill to the surrounding grade elevation.

#### 3.3.2 Non-Hazardous Soil Excavation Deviations from Plan

##### ***Area B***

During site preparation activities, it was discovered that Area B contained primarily rubble/debris (e.g., concrete, re-bar, bricks) fill material. It was therefore decided that the proposed IRM strategy for Area B would be reassessed. The presence of rubble/debris in Area B was further confirmed with a series of test pits that are discussed in Section 9 of this report. This area was not excavated.

##### ***Area D Debris Area***

During excavation of Area D, an area containing primarily rubble/debris (e.g., concrete, bricks, cross-ties, re-bar) was encountered in sub-areas D11, D12, and D14. This debris area was excavated down to native sand to an approximate depth of 6 feet below original grade. The debris was then segregated into a separate rubble/debris stockpile located in the soil stockpile area illustrated in Figure 1.

##### ***Area F Trench Debris***

During excavation of Area F, a trench-like feature containing primarily rubble/debris (e.g., concrete, bricks, re-bar) was encountered in sub-areas F10, F12, and F14. This debris area was excavated down to native sand to an approximate depth ranging between 6 and 8 feet below original grade. The debris was then segregated into a

separate rubble/debris stockpile located in the soil stockpile area illustrated in Figure 1. Upon completion of the debris removal, soil samples were collected along the trench bottom at the five locations (TS-1 through TS-5) shown on Figure 7. The samples were submitted under standard C-O-C procedures to Test America Laboratories located in University Park, Illinois. The samples were analyzed for total metals (arsenic, cadmium, lead, and zinc).

#### ***Area F Additional Quarter Acre Grid Excavation Depth***

Due to elevated concentration detected in confirmation samples collected at the 2-foot excavation depth, additional soil was excavated down to a depth of 4-feet in the following sub-areas: F4, F5, F7, F10, F12, F14, F16, and F17. Additionally, at sub-areas F4, F7, F15, and F17, the confirmation soil sampling results at the 2-foot depth and additional XRF screening indicated concentrations near or above the site-specific potentially hazardous soil concentration of 4,606 mg/kg for lead. Therefore soil was segregated as potentially hazardous at: F4 (2- to 3-foot depth), F7 (2- to 4-foot depth), F15 (2- to 4-foot depth), and F17 (2- to 4-foot depth).

Upon completion of the additional excavation in Area F, confirmation soil samples were collected consistent with the methods described in Section 3.3.1 and are depicted on Figures 3-6.

#### ***Area G Additional Quarter-Acre Grid Excavation Depth***

Due to elevated concentration detected in confirmation samples collected at the 2-foot excavation depth, additional soil was excavated down to a depth of 4 feet in sub-areas G7 and G8.

Upon completion of the additional excavation in Area G, confirmation soil samples were collected consistent with the methods described in Section 3.3.1 and are depicted on Figures 3-6.

### **3.4 Buffer Zone Soil Sampling**

Additional Buffer Zone characterization soil samples (BFZ-32 to BFZ-48) were collected in areas where IRM activities were not taking place. Composite soil samples were collected in a 10-foot by 10-foot area at each location. Each soil composite sample was prepared by combining five sub-samples from the 0 to 2-foot depth interval to provide an area-weighted average concentration. Sample results are shown on Figures 3 through 6.

Samples were collected using a hand auger. Soil sampling and decontamination procedures were consistent with the sampling methods outlined in the Field Sampling Plan Buffer Zone IRM Soil Excavation and Management, dated September 2012 and provided in Appendix B.

### **3.5 Air Monitoring and Dust Management**

Excavation, transport, and storage of contaminated soils have the potential to generate dust that could migrate from the active work areas. Therefore, dust suppression measures were implemented during excavation activities such as water spraying and limiting on-site traffic speeds to help control particulates in the air.

For the purpose of protecting site worker health and safety during IRM activities, four types of air monitoring were performed. A complete description of the air monitoring

procedures is provided in Appendix Q of the project Health and Safety Plan (HASP) which was provided under separate cover. The air monitoring plan is also included in Appendix D of this report. A summary of the air monitoring/sampling types is provided below.

### ***Meteorological Conditions Monitoring***

Meteorological data were continuously recorded from the beginning to the end of the remediation work using an on-site meteorological monitoring station located in a central area of the site. The station recorded the following parameters:

- Wind speed
- Wind direction
- Air temperature
- Relative humidity
- Barometric pressure
- Precipitation

The meteorological station was located in an area that was clear of buildings, trees, or other obstructions, at a height of approximately 10 feet or more above ground in accordance with USEPA siting and exposure criteria (USEPA 2008).

### ***Work Area/Work Space Air Monitoring***

The objective of this air sampling component was to assess concentrations of dust in the immediate work area. Real-time measurements for dust particles in work spaces were obtained using a *personal* DataRAM or equivalent meter. Data collection occurred during excavation activities as close to the worker breathing space as possible. Readings were collected at least twice per day during excavation activity.

### ***Downwind Work Area Particulate Sampling***

Downwind sampling for PM<sub>10</sub> dust and metals was performed at locations approximately 100 to 200-feet downwind of work activities. A MiniVol PM<sub>10</sub> low volume sampler was used to collect filter samples of PM<sub>10</sub> and metals (arsenic, cadmium, and lead). Sampling occurred at least one day per week during excavation tasks. Figure 8 shows the location of these samples. The samples were submitted under standard C-O-C procedures to Bureau Veritas of Novi, Michigan.

The time period for each sample collection occurred over 8 to 10-hours corresponding to a typical construction work day. PM<sub>10</sub> was selected as the dust type to sample because it is invisible in the ambient air and is the basis for state and federal ambient air quality 24-hour particulate standards.

### ***Personnel Monitoring***

Personnel air-monitoring samples were collected for arsenic, cadmium, and lead in the worker breathing zone to assess worker exposure levels using National Institute for Occupational Safety and Health Method 7300. Analysis of these samples was performed by an American Industrial Hygiene Association approved laboratory. The collection of the samples was performed by the excavation contractor (Summit).

Samples were collected on the laborers who would likely have the highest exposure to airborne dust.

## 4.0 EXCAVATION VOLUMES AND STOCKPILES

Approximately 5,768 cubic yards of potentially hazardous soil and 71,571 cubic yards of non-hazardous soil (including rubble/debris) were excavated from the IRM areas.

Details of the volume calculations are included in Tables 1 and 2. A photo log documenting each IRM area before IRM activities and after IRM activities is provided in Appendix E. Final disposal of the stockpiles is as follows:

- Final disposal of the potentially hazardous soil stockpile will be determined by DuPont during 2013. Possible options include but are not limited to on-site treatment of metals concentrations present above the site specific hazardous waste standards.
- Final disposal of the non-hazardous soil stockpile will be determined by DuPont during 2013. Possible options include but are not limited to incorporation of the material into the on-site landfill or disposal offsite.
- Debris piles (e.g., concrete, bricks, blocks) will be processed and ground into diameters suitable for use on-site as road base fill material. Scrap metal will be segregated and recycled.
- Cleared vegetation (brush and tree stockpiles) will be ground into mulch and spread on-site.

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## 5.0 IRM SAMPLING RESULTS

This section presents the analytical results of the IRM confirmation sampling, buffer zone sampling, and air monitoring efforts performed from September through December 2012. Laboratory analytical reports for confirmation soil sampling and buffer zone soil sampling are provided in Appendix F. Laboratory analytical reports for air sampling are provided in Appendix G.

### 5.1 Potentially Hazardous Soil Confirmation Sampling Results

Concentrations detected above the site-specific hazardous soil screening level for lead were present at the following sample locations:

- HW-C1 NORTH WALL, HW-D1 NORTH WALL, and HW-E1 SOUTH WALL. These samples were collected at the limits of the originally proposed IRM boundaries for Areas C, D, and E. During 2012 IRM activities, DuPont made the decision to not extend excavations outside the proposed IRM boundaries, and that soil to the north of HW-C1, north of HW-D1, and south of HW-E1 will be investigated and addressed at a later date.
- HW-C1 FLOOR, HW-C2 FLOOR, HW-D1 FLOOR, and HW-D3 FLOOR. For these locations, clean soil backfill was imported and a minimum of 2 feet of cover was placed over each location thereby eliminating the human health soil exposure pathway. Additional discussion on backfill is provided in Section 6.0.

Results for all other potentially hazardous excavation soil confirmation samples were below the site specific hazardous screening levels. Potentially hazardous soil excavation confirmation sample analytical results are provided in Table 3. Locations of the hazardous soil excavations are shown on Figure 2.

### 5.2 Non-Hazardous Soil Confirmation Sampling Results

Concentrations detected above the site-specific hazardous soil screening level for lead were present at confirmation sample D8. For this sample area, clean soil backfill was imported and a minimum of 2 feet of cover was placed over the area thereby eliminating the human health soil exposure pathway. Additional discussion on backfill is provided in Section 6.0. Results for all other soil confirmation samples were below the site-specific hazardous screening levels.

Non-hazardous soil excavation confirmation sample analytical results are provided in Table 4. Samples included A1 to A6, C1 to C10, D1 to D18, E1 to E7, F1 to F17, G1 to G9, H1 to H5, and I1 to I2. The locations of the non-hazardous soil excavations and corresponding results for each quarter acre area are provided in Figures 3 through 6.

Results for samples collected along the bottom of the Area F trench feature (TS-1 to TS-5) are provided in Table 5. The locations of the trench and sampling points and corresponding results are provided in Figure 7.

### 5.3 Buffer Zone Soil Sampling Results

The lead concentration for the sample collected at BFZ-43 was above the site-specific hazardous soil level. An additional hazardous soil excavation measuring 25 feet by 25 feet by 2 feet deep was therefore performed at BFZ-43. This excavation is discussed in Section 3.2.2. Results for all other buffer zone soil samples were below the site-specific hazardous threshold levels.

Buffer zone soil sample (BFZ-32 to BFZ-48) analytical results are provided in Table 6. The locations of the buffer zone samples and corresponding results are provided in Figures 3 through 6. Boring logs for the buffer zone soil samples are provided in Appendix H.

## 5.4 Air Monitoring Results

Site-specific meteorological statistics are summarized in Table 7.

Real time dust monitoring readings did not exceed the worker health and safety action level (2.5 milligrams per cubic meter [ $\text{mg}/\text{m}^3$ ]). Field measurements are presented and summarized in Table 8.

$\text{PM}_{10}$  dust and metals filter sample analytical results did not exceed worker health and safety action levels (2.5  $\text{mg}/\text{m}^3$  for  $\text{PM}_{10}$  dust, 0.01  $\text{mg}/\text{m}^3$  for arsenic, 0.005  $\text{mg}/\text{m}^3$  for cadmium, and 0.05  $\text{mg}/\text{m}^3$  for lead). The results, including blank samples, are summarized in Table 9, and the sample locations are illustrated on Figure 8.

Additional data gathered on site-specific wind speeds and wind directions are also provided on Wind Rose Reports in Appendix I.

## 6.0 BACKFILLED AREAS AND FINAL CONTOURING

Approximately 15,169 cubic yards of clean soil backfill was imported to the site. The imported backfill was selected based on similarity to native soils and was comprised primarily of a grain size similar to the native on-site sand. Selection of base fill material was also discussed with TNC to ensure it was appropriate material for the site. Two primary purposes of the backfill placement were (1) to maintain proper surface drainage/grading and (2) provide, at a minimum, 2 feet of clean cover for select sub-areas. These subareas were located in Areas C, D, and BFZ-43 and had elevated concentrations of lead in confirmation sample results. Backfill placement locations are illustrated in Figure 9.

Prior to importation of the backfill, soil samples (Sample IDs 3603 and 3604) were collected from the borrow site and submitted to Test America Laboratories in Valparaiso, Indiana, for analysis of: volatile organic compounds, semi-volatile organic compounds, pesticides, herbicides, polychlorinated biphenyls, and metals (arsenic, barium, cadmium, chromium, lead, selenium, silver, and mercury). A copy of the analytical report is provided in Appendix J.

Upon completion of all the IRM excavations and the placement of backfill in selective areas, each IRM area was graded and contoured such that it would blend into the natural topography of the surrounding terrain.

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## 7.0 SEEDED AREAS

When final contours were achieved in all the IRM areas, Cardno JF New (Cardno) of Walkerton, Indiana, completed vegetative seeding of approximately 15 acres of uplands in December 2012. The seed mix was comprised of a variety of native grasses/plants and was approved by TNC prior to spreading of the seed. A map illustrating the areas that were seeded is provided as Figure 10. A copy of the seed mix specifications and Cardno's seeding report from is provided in Appendix K.

Wetland areas were not seeded as directed by TNC and as noted in the 401 and 404 permits. TNC intends to let these areas seed naturally and/or conduct some selective seeding with native wetland plant species at their discretion.

For the purposes of temporary erosion control, the non-hazardous soil stockpile was hydro-seeded with a mix of winter wheat and rye grass. TNC approved the seed mix prior to application of the seed. Hydro-seeding services were provided by Daylight. A copy of the stockpile seed specifications is provided in Appendix K.

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## 8.0 SURVEYING

Site surveying was conducted throughout IRM activities to control excavation depths, horizontal dimensions, and volume calculations. Land surveying services were provided under the Summit Contract by Randall Miller and Associates of Marion, Indiana. The following surveys were conducted:

- Pre-excavation potentially hazardous soil locations
- Post-excavation potentially hazardous soil areas
- Pre-excavation IRM Areas (A through I)
- Post-excavation IRM areas (A through I)
- Final grade for IRM areas (A through I)

Copies of the survey mapping are provided in Appendix L.

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## 9.0 ADDITIONAL SITE WORK CONDUCTED

Some additional tasks were performed during the IRM activities at the direction of DuPont. These additional tasks are documented below.

### 9.1 Area A Test Pits and Additional Soil Sampling

A fine powdery material was encountered during IRM activities below the surface soil (0.5-foot depth) in the area between IRM Area A and B. Samples of the white powdery material were collected in three locations (SP-1 through SP-3) and submitted under standard C-O-C procedures to Test America Laboratories in University Park, Illinois, for total metals and TCLP metals analysis. Results indicated the samples consisted primarily of calcium and did not contain elevated concentrations of metals. Soil sample results are provided in Table 10, and sample locations are provided on Figure 11. The laboratory analytical report is provided in Appendix F.

Test pits (TP-7 through TP-11) were performed in this area to determine thickness and distribution of the material. No analytical samples were collected. Layers of the powdery material were encountered in each of the test pits ranging from 1 to 5 feet thick. Test pit locations are provided in Figure 12.

### 9.2 Areas B and C Test Pits

Large pieces of rubble/debris (e.g., concrete, re-bar, and bricks) fill material were discovered during site preparation along the fence line on the eastern edge of Area B. Test pits (TP-1 through TP-6 and TP-12 through TP-14) were performed in Areas B and C to determine the thickness of the debris material. Debris was encountered in each of the test pits from ground surface to an average depth of 7.5 feet. DuPont and Parsons determined that removing the fill material in Area B could undermine the integrity of the landfill; therefore, Area B IRM activities were not conducted. The overall remedial strategy for Area B will be reassessed, and the excavation of the two potentially hazardous soil locations in Area B will be addressed at a later date. Test pit locations are provided in Figure 12. No analytical samples were collected.

### 9.3 Area D Water Sampling

During IRM activities in Area D, water samples were collected from the former pond (which has since been dewatered, excavated, and backfilled to surrounding grade) and from the stormwater/sewer pipe that flowed into the pond from the west (which has since been abandoned in place with concrete flow-fill between the nearest manhole and the pond). Samples were submitted to Test America Laboratories under standard C-O-C procedures for analysis of total and dissolved metals. A copy of the laboratory analytical report is provided in Appendix M.

Results indicated elevated levels of arsenic in both samples; however, the total and dissolved arsenic concentrations (30, 54 milligrams per liter [mg/L] total and 46 mg/L dissolved) for the Area D Pipe sample were significantly higher than the total and dissolved arsenic concentrations (2.5 mg/L total and 1.1 mg/L dissolved) for the Area D Pond sample. The results suggest possible dilution of arsenic at the pond through groundwater. Water sampling results are provided in Table 11. Sample locations are provided on Figure 13.

## 9.4 XRF and Laboratory Data Correlation Evaluation

As part of data reduction activities, a data correlation evaluation was performed on the final XRF field data versus the final laboratory analytical results for metals (arsenic, cadmium, and lead). Evaluations were performed for the potentially hazardous soil samples, non-hazardous soil samples, and the buffer zone soil samples for each of the three metals (arsenic, cadmium, and lead). Good correlations were found in most evaluations.

## 10.0 REMAINING IRM ACTION ITEMS

The Buffer Zone IRM items to be addressed in 2013 are as follows:

- Final disposal of the potentially hazardous soil stockpile will be determined by DuPont during 2013. Possible options include but are not limited to on-site treatment of metals concentrations present above the site-specific hazardous waste standards and disposal on- or off-site.
- Final disposal of the non-hazardous soil stockpile will be determined by DuPont during 2013. Possible options include but are not limited to incorporation of the material into the on-site landfill or off-site disposal.
- Debris piles (e.g., concrete, bricks, blocks) will be processed and ground into diameters suitable for use on-site as road base fill material. Scrap metal will be segregated and recycled.
- Cleared vegetation (brush and tree stockpiles) will be ground into mulch and spread on-site.
- The remaining potentially hazardous soil locations in IRM Area B will be addressed.
- The potentially hazardous soil located north of HW-C1, north of HW-D1, and south of HW-E1 will be investigated and addressed with future remedial actions.
- The final location of the fence separating the former manufacturing area and the natural area will be determined, and the fence will be installed.

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## 11.0 CONCLUSION

Confirmation soil sampling results demonstrated that significant reductions in contaminant levels have been accomplished in the buffer zone. With the exception of the remaining IRM action items (Section 10), the objectives of the IRM have been met. These objectives were to minimize potential soil contaminant migration into the sensitive habitat of the Natural Area and to extend coverage of existing high-quality habitat.

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## 12.0 REFERENCES

EPA April 1998. Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Revision 5.

URS September 2012. Project-Specific Waste Management Plan For Interim Remedial Measures.

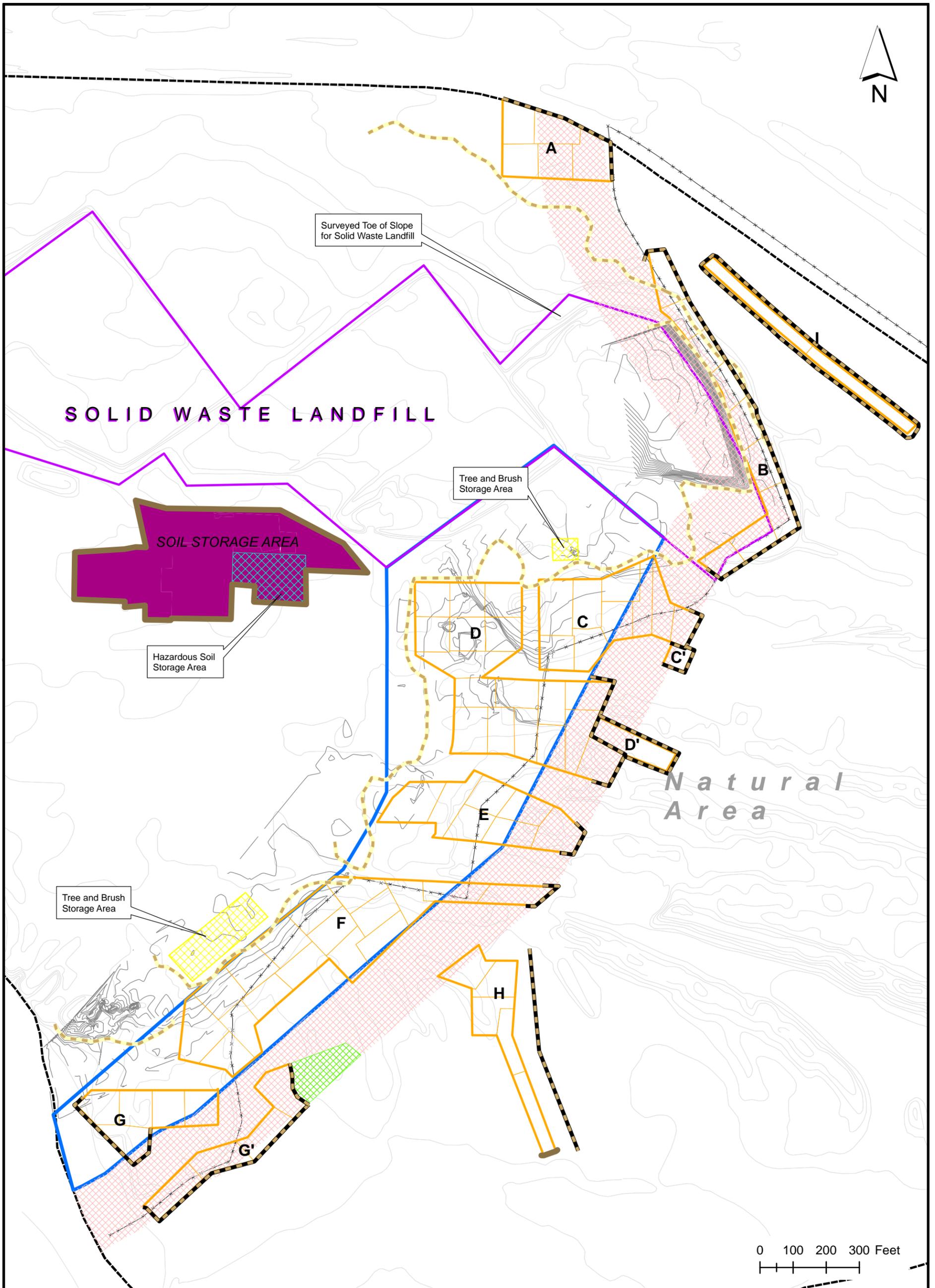
Parsons July 2012. Health and Safety Plan for DuPont East Chicago Interim Remedial Action – Excavation.

United States Environmental Protection Agency, USEPA (2008), "Quality Assurance Handbook for Air Pollution Measurements" Volume IV: Meteorological Measurements, Version 2.0, EPA-454/B-08-002.

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## FIGURES





Surveyed Toe of Slope for Solid Waste Landfill

Tree and Brush Storage Area

Hazardous Soil Storage Area

Tree and Brush Storage Area

**SOLID WASTE LANDFILL**

**SOIL STORAGE AREA**

*Natural Area*

0 100 200 300 Feet

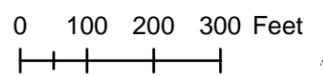
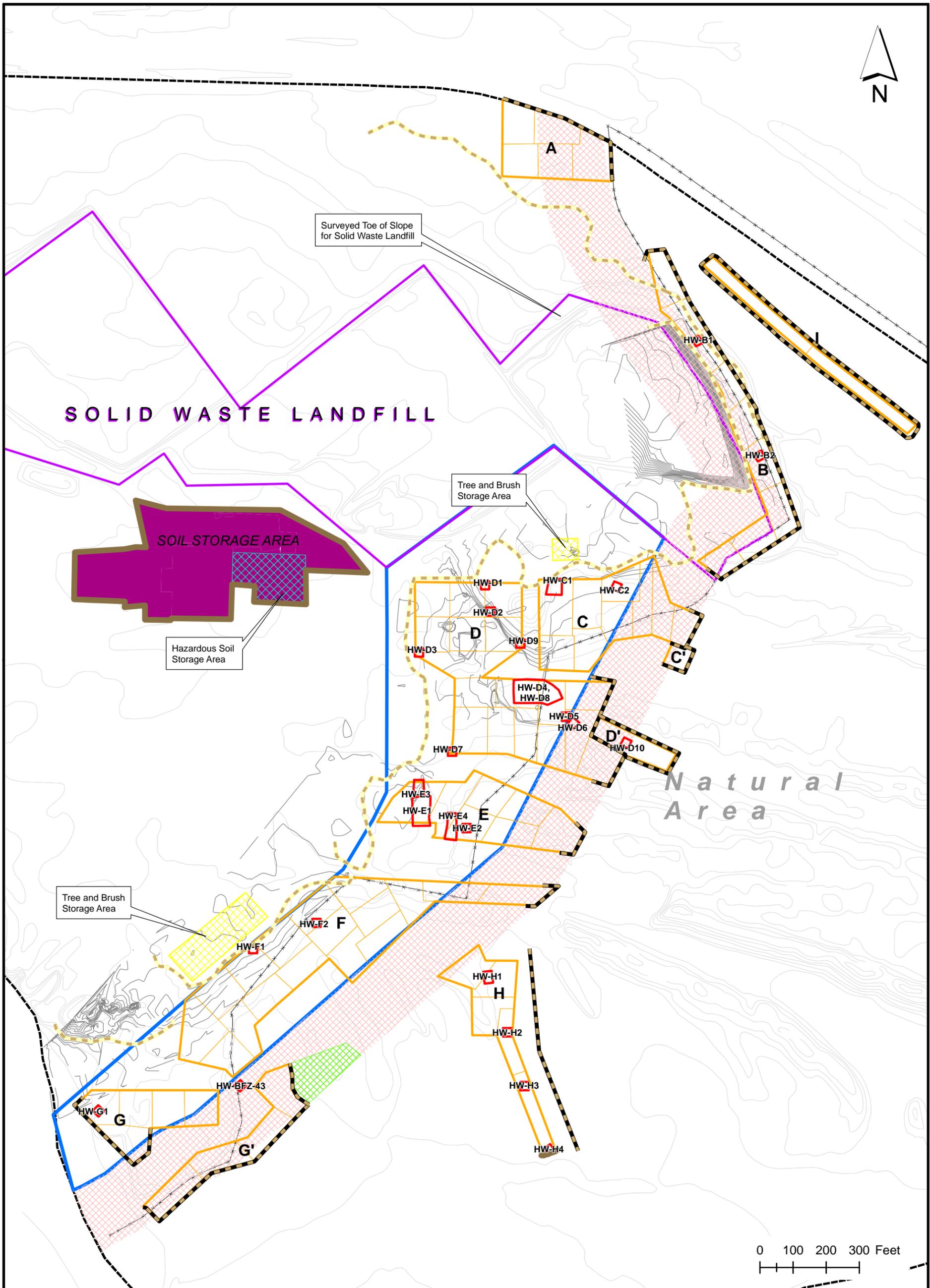
Down Gradient Silt Fence	Soil Storage Area	Solid Waste Landfill	Sited Contours- prior to 2009
Straw Bales	Tree and Brush Storage Area	Redevelopment Area	DuPont Property Line
Up Gradient Silt Fence	Quarter Acre Sampling Areas	IRM Excavation- 2012	Natural Area Fence
Sensitive Habitat - No excavation	Hazardous Soils Storage Area	Buffer Zone	Surveyed Topo - 11/2011

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Title: **Interim Remedial Measure Areas Overview**

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East Chicago, Indiana

Prepared by: Muyiwa Sami	Date: 2/14/2013	DuPont Project No: 507942
Reviewed by: Keith Thompson	Figure No: 1	PARSONS Project No: 446868
PATH J:\DuPont East Chicago\GIS\East_Chicago\2012-2013 Remediation\Bufferzone IRMMAs\Figure_1_Interim_Remedial_Measure_Areas.mxd		



Down Gradient Silt Fence	Hazardous Soil Excavation Locations	Buffer Zone	Surveyed Topo - 11/2011
Straw Bales	Soil Storage Area	Solid Waste Landfill	Sitewide Contours- prior to 2009
Up Gradient Silt Fence	Tree and Brush Storage Area	Redevelopment Area	DuPont Property Line
Sensitve Habitat - No excavation	Quarter Acre Sampling Areas	DuPont Property Line	Natural Area Fence
Hazardous Soils Storage Area	IRM Excavation- 2012		

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Title: **Hazardous Soil Excavation Locations**

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Muyiwa Sami

Reviewed by:  
Keith Thompson

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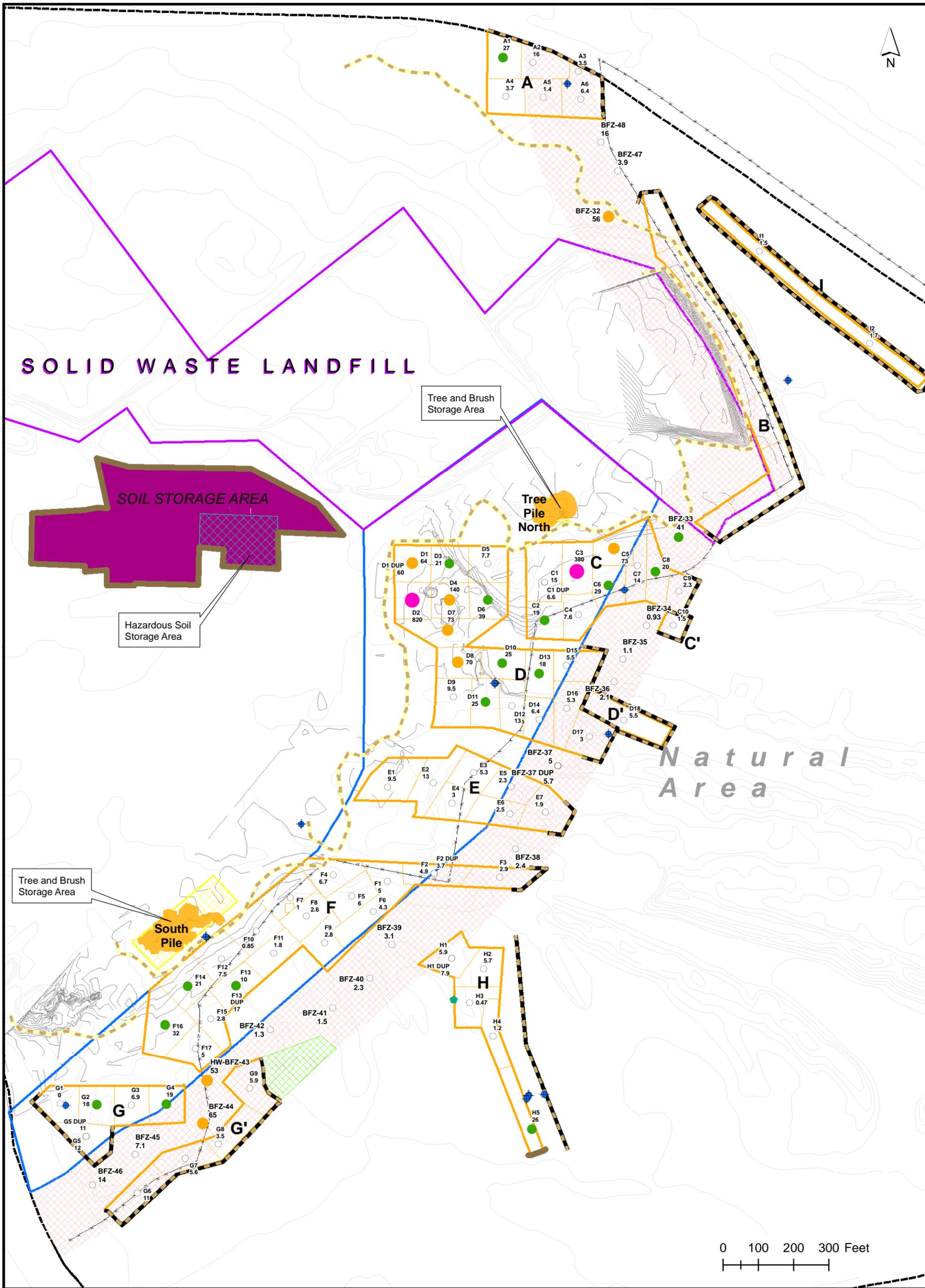
Date:  
2/15/2013

Figure No: 2

DuPont Project No:  
507942

PARSONS Project No:  
446868

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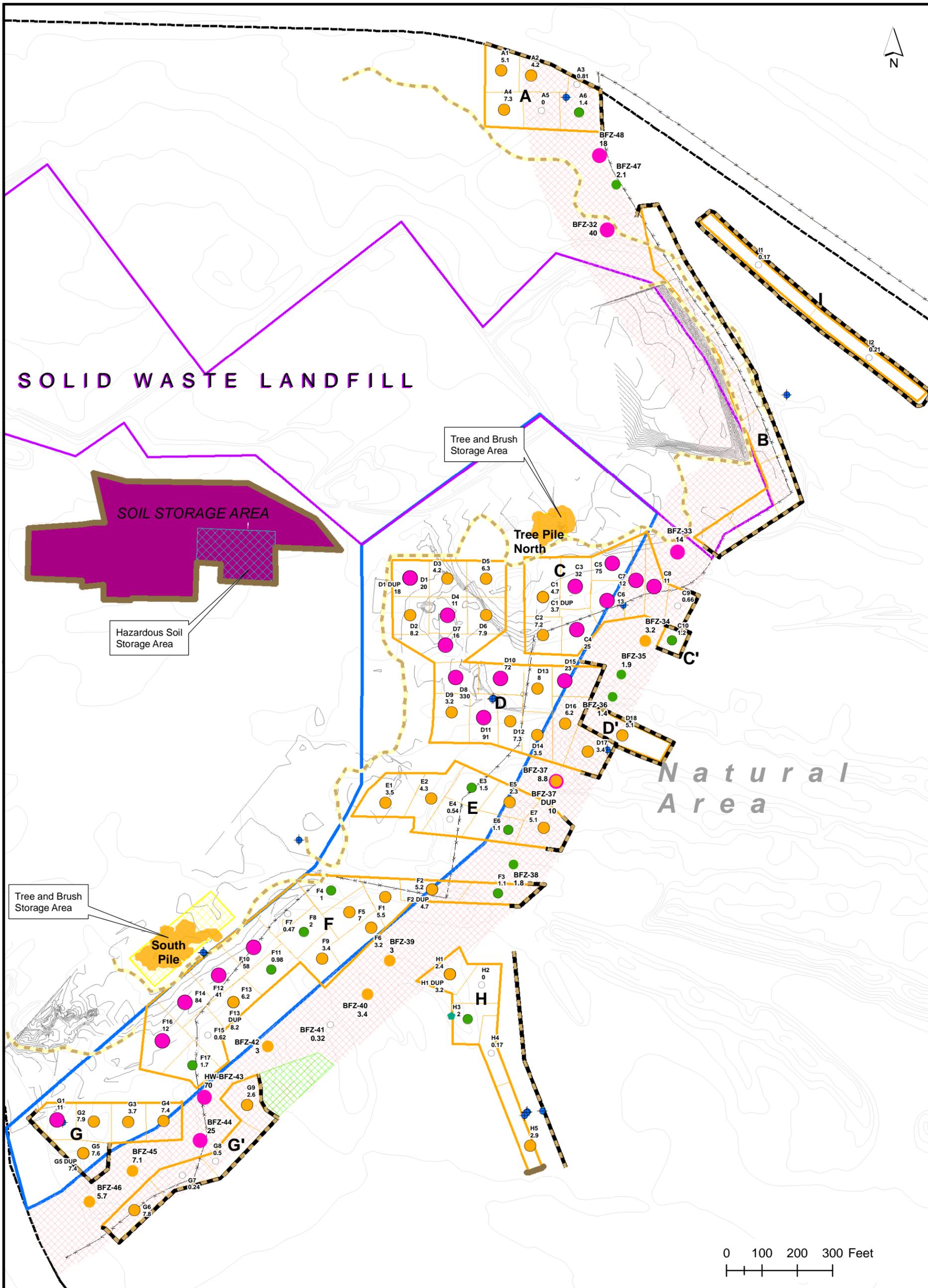
<ul style="list-style-type: none"> <li><span style="color: blue;">◆</span> Monitoring Well</li> <li><span style="color: green;">●</span> Piezometer</li> <li> Down Gradient Silt Fence</li> <li> Straw Bales</li> <li> Up Gradient Silt Fence</li> <li> Tree Piles Area</li> <li> Sensitive Habitat - No excavation</li> </ul>	<ul style="list-style-type: none"> <li> Hazardous Soils Storage Area</li> <li> Soil Storage Area</li> <li> Tree and Brush Storage Area</li> <li> Quarter Acre Sampling Areas</li> <li> IRM Excavation- 2012</li> <li> Buffer Zone</li> <li> Solid Waste Landfill</li> </ul>	<ul style="list-style-type: none"> <li> Redevelopment Area</li> <li> DuPont Property Line</li> <li> Surveyed Topo - 11/2011</li> <li> Sitewide Contours- prior to 2009</li> <li> Natural Area Fence</li> </ul>	<p><b>Arsenic</b></p> <ul style="list-style-type: none"> <li><span style="color: grey;">○</span> 0-16 mg/kg</li> <li><span style="color: green;">●</span> 16-51 mg/kg</li> <li><span style="color: orange;">●</span> 51-230 mg/kg</li> <li><span style="color: magenta;">●</span> &gt;230 mg/kg</li> </ul>
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**Title: Confirmation Soil Sampling Results- Arsenic**

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<ul style="list-style-type: none"> <li>Monitoring Well</li> <li>Piezometer</li> <li>Down Gradient Silt Fence</li> <li>Straw Bales</li> <li>Up Gradient Silt Fence</li> <li>Tree Piles Area</li> <li>Sensitive Habitat - No excavation</li> </ul>	<ul style="list-style-type: none"> <li>Hazardous Soils Storage Area</li> <li>Soil Storage Area</li> <li>Tree and Brush Storage Area</li> <li>Quarter Acre Sampling Areas</li> <li>IRM Excavation- 2012</li> <li>Buffer Zone</li> <li>Solid Waste Landfill</li> </ul>	<ul style="list-style-type: none"> <li>Redevelopment Area</li> <li>DuPont Property Line</li> <li>Surveyed Topo - 11/2011</li> <li>Sitewide Contours- prior to 2009</li> <li>Natural Area Fence</li> </ul>	<b>Cadmium</b> <ul style="list-style-type: none"> <li>0-0.91 mg/kg</li> <li>0.91-2.21 mg/kg</li> <li>2.21-9.1 mg/kg</li> <li>&gt;9.1 mg/kg</li> </ul>
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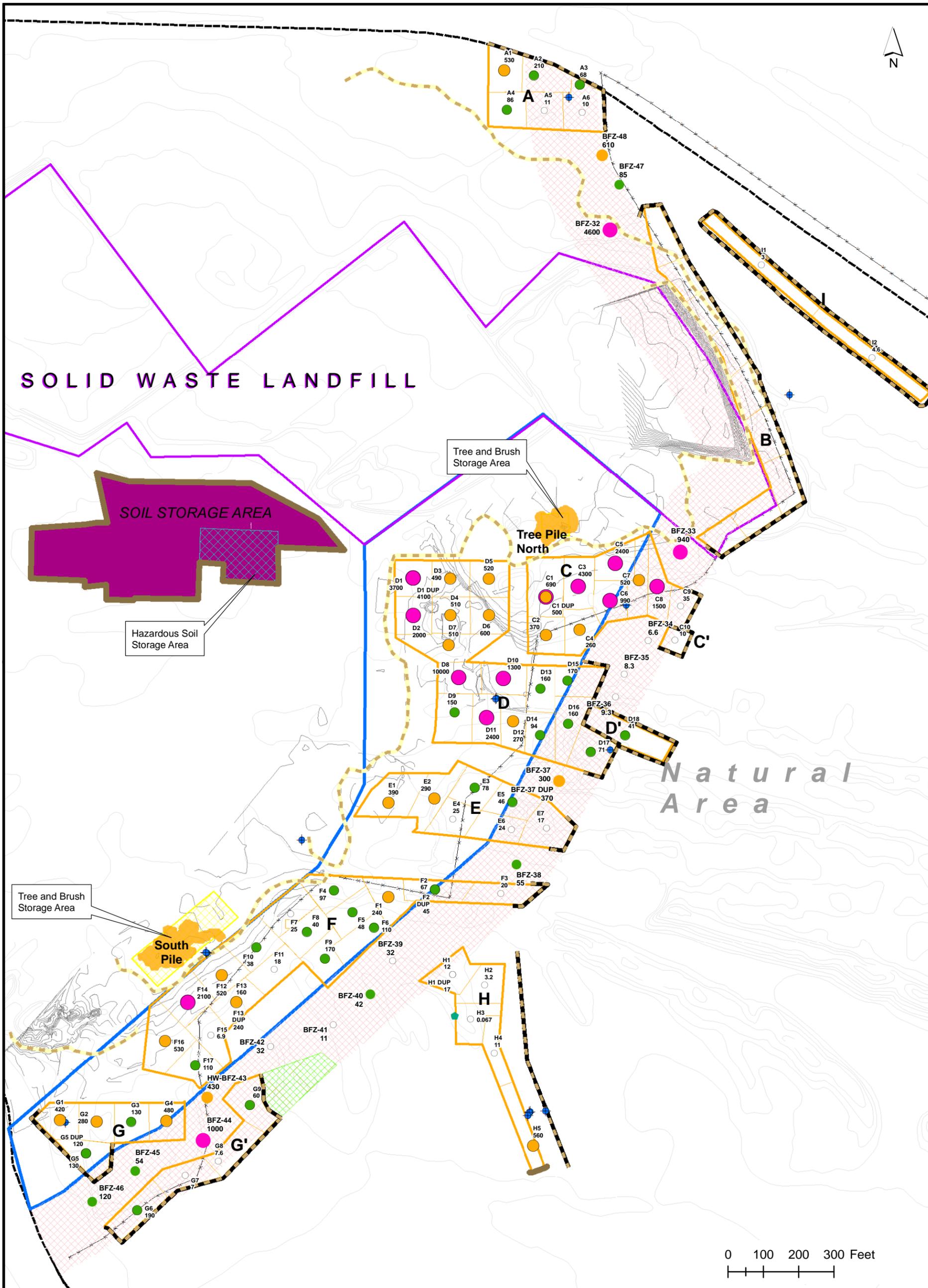
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**Title: Confirmation Soil Sampling Results- Cadmium**

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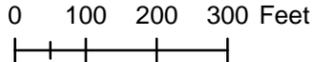
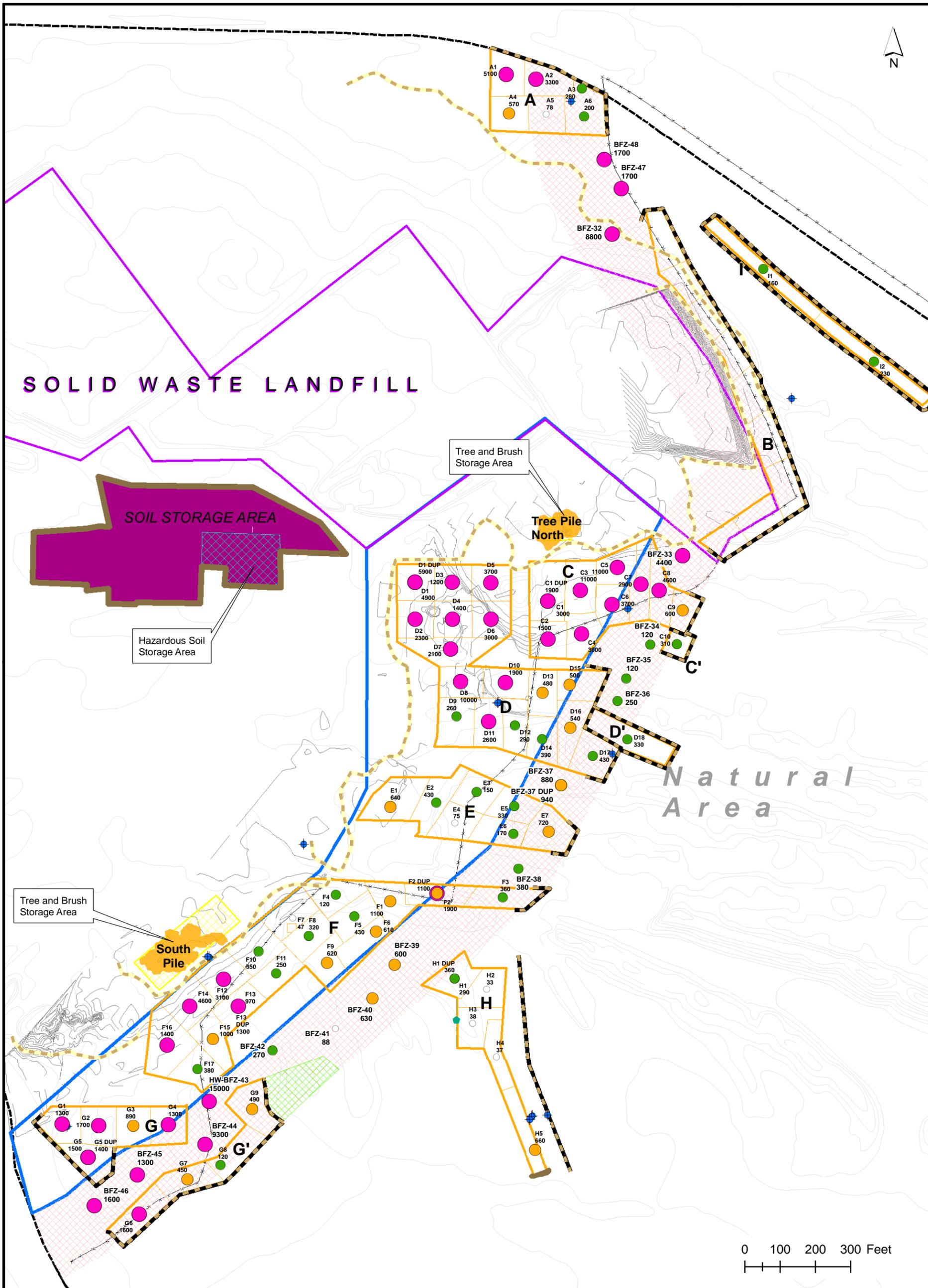
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Title: **Confirmation Soil Sampling Results- Lead**

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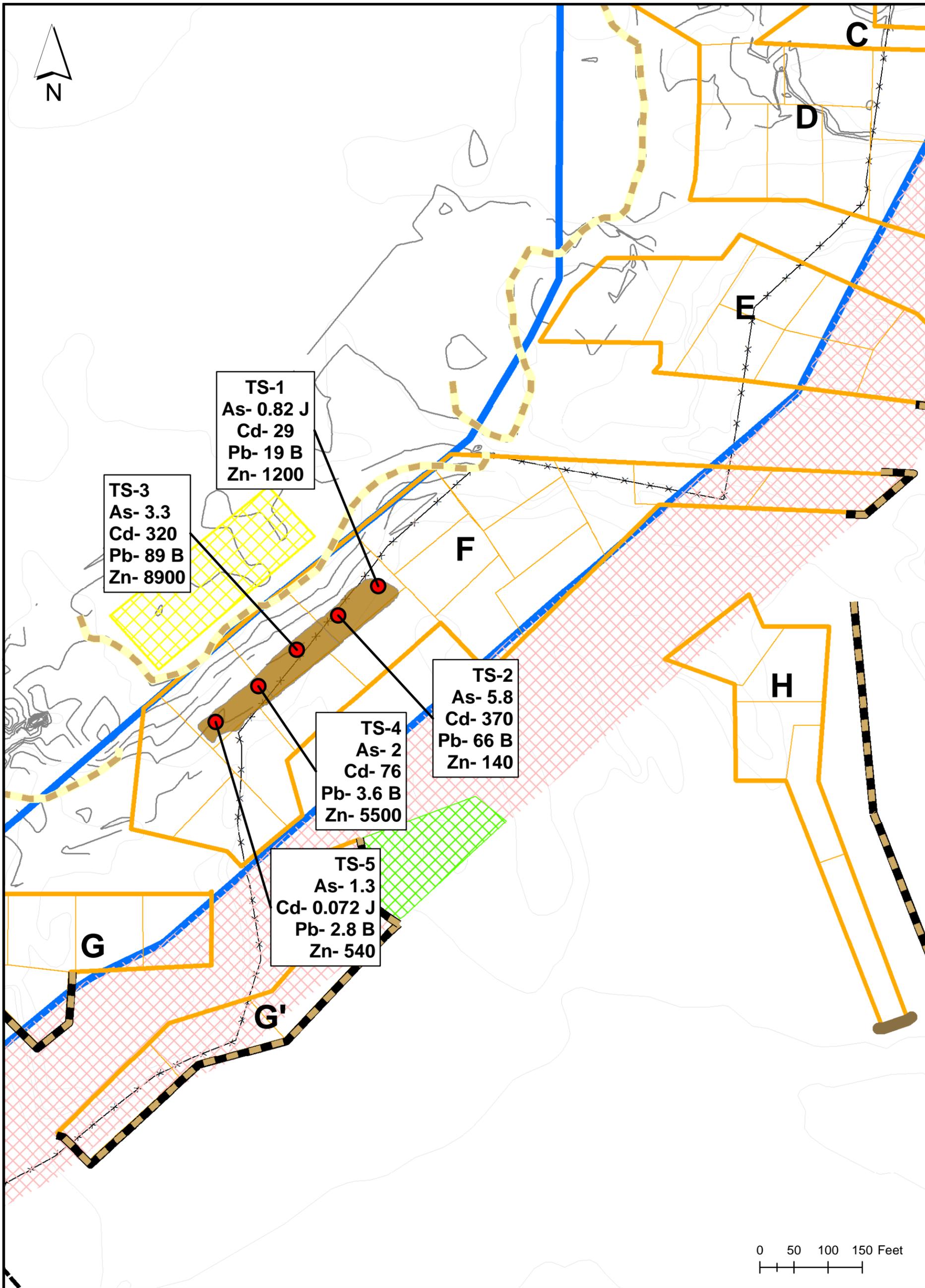
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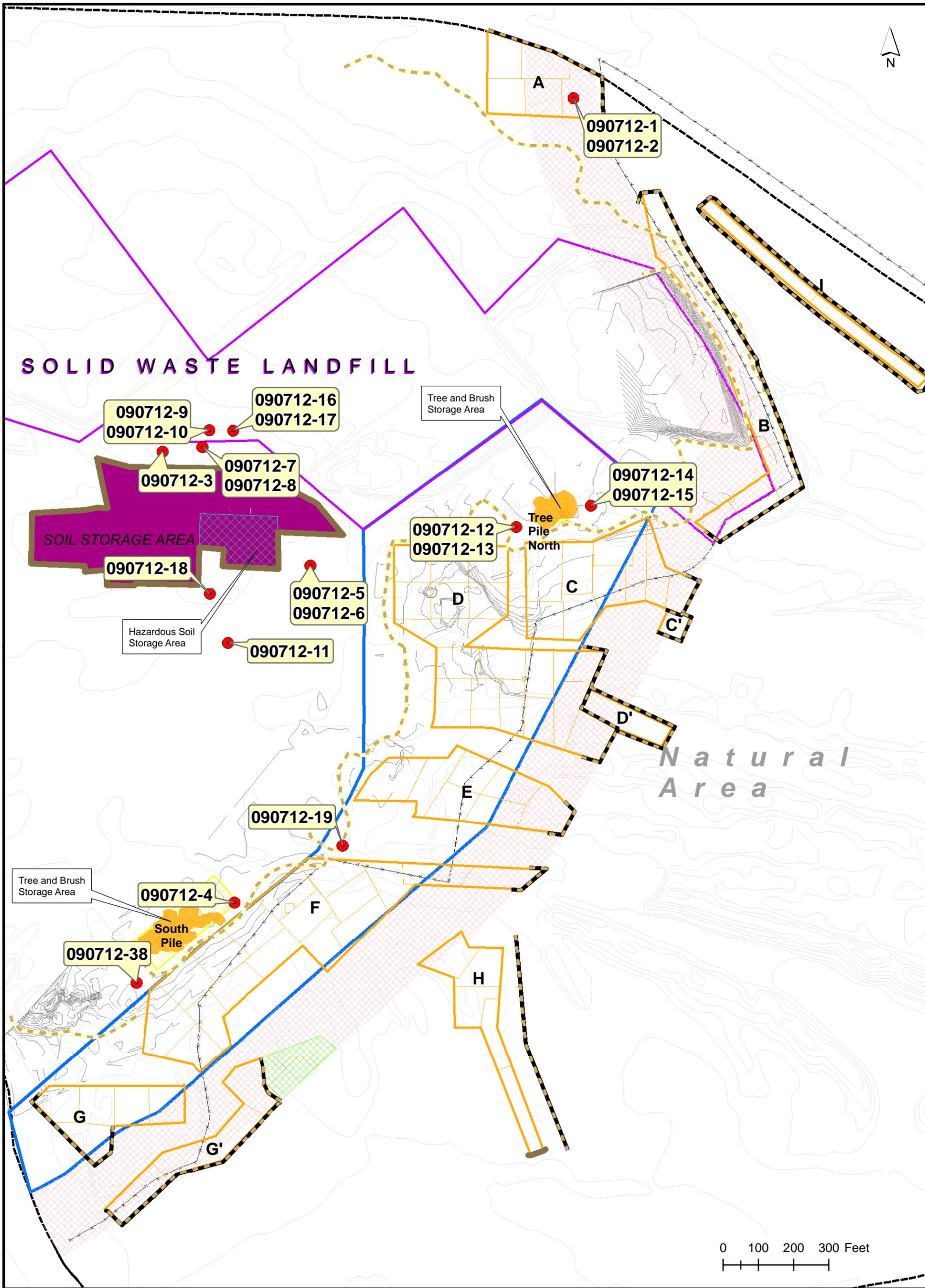
Title: **Confirmation Soil Sampling Results- Zinc**

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● Air Sampling Location	▨ Sensitive Habitat - No excavation	▭ IRM Excavation- 2012	— DuPont Property Line
— Down Gradient Silt Fence	▨ Hazardous Soils Storage Area	▨ Buffer Zone	— Surveyed Topo - 11/2011
— Straw Bales	▨ Soil Storage Area	▨ Solid Waste Landfill	— Sitewide Contours- prior to 2009
— Up Gradient Silt Fence	▨ Tree and Brush Storage Area	▨ Redevelopment Area	— Natural Area Fence
▨ Tree Piles Area	▨ Quarter Acre Sampling Areas		

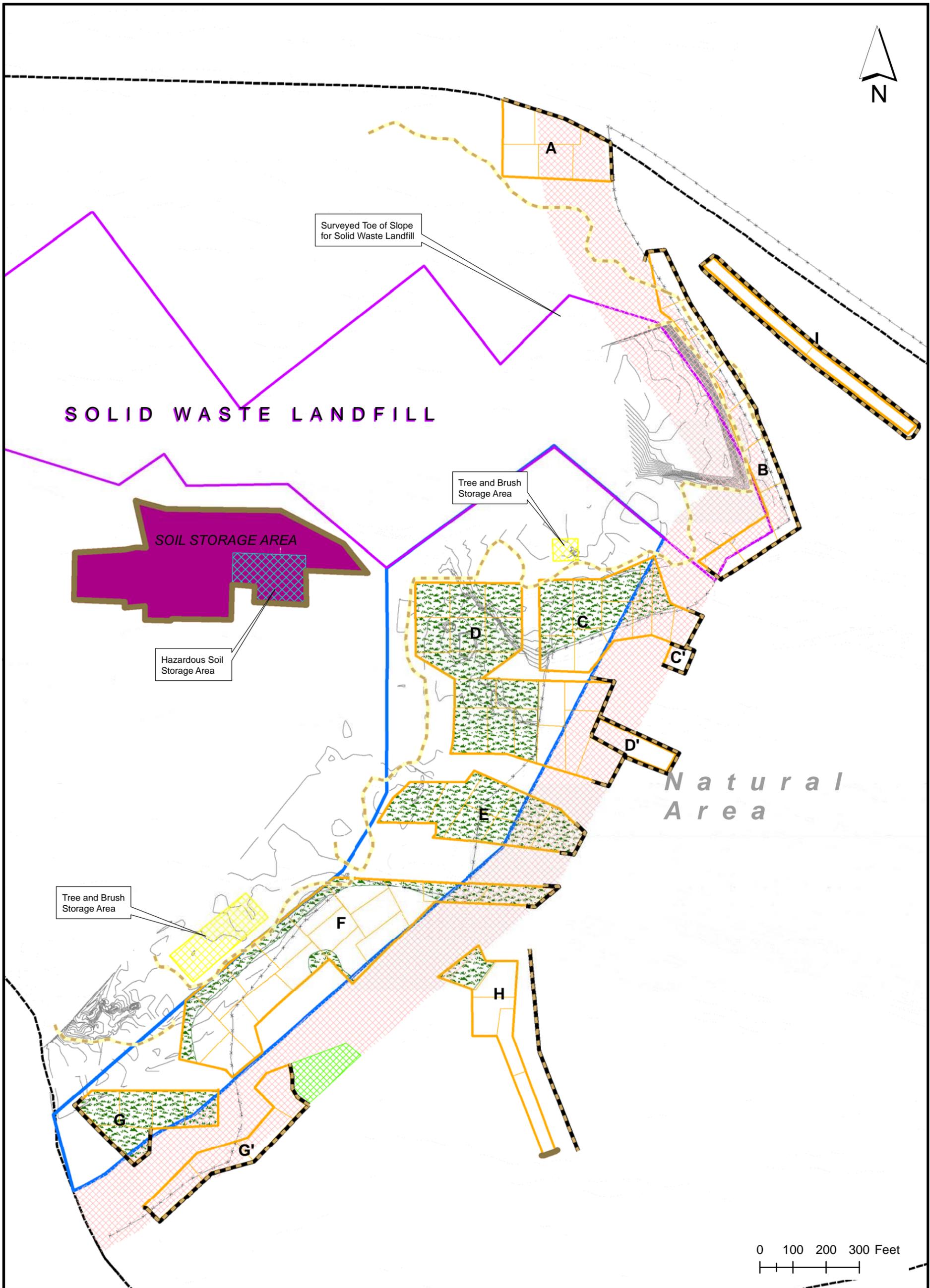
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Title: **Air Sampling Location**

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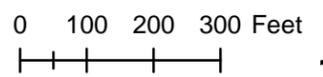
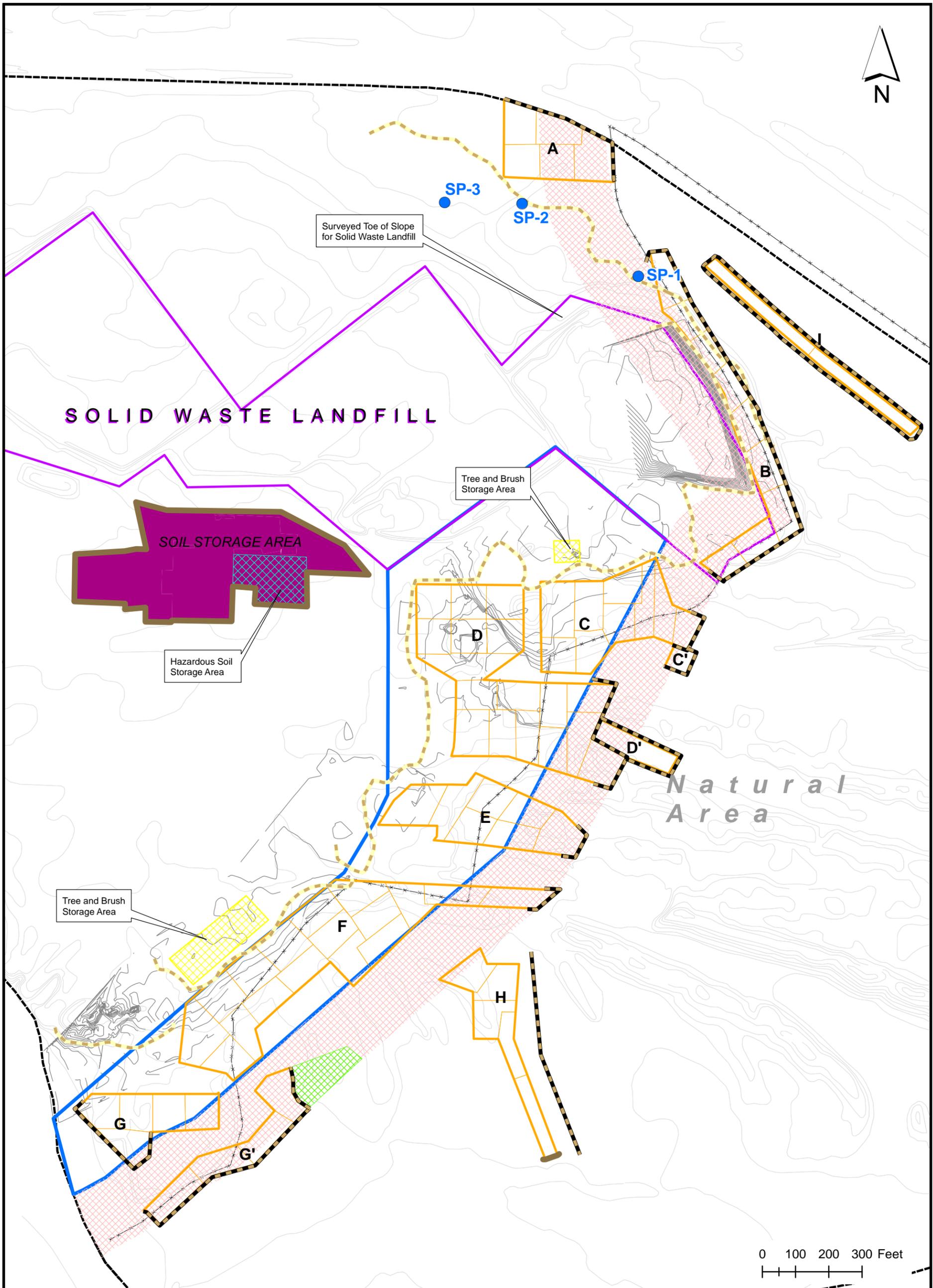
Down Gradient Silt Fence	Soil Storage Area	Solid Waste Landfill	Surveyed Topo - 11/2011
Straw Bales	Tree and Brush Storage Area	Redevelopment Area	Sitewide Contours- prior to 2009
Up Gradient Silt Fence	Quarter Acre Sampling Areas	Seeded Areas	DuPont Property Line
Sensitive Habitat - No excavation	IRM Excavation- 2012	Buffer Zone	Natural Area Fence
Hazardous Soils Storage Area			

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Title: **Seeded Areas**

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Additional Soil Sample Location	Hazardous Soils Storage Area	Buffer Zone	Surveyed Topo - 11/2011
Down Gradient Silt Fence	Soil Storage Area	Solid Waste Landfill	Sitewide Contours- prior to 2009
Straw Bales	Tree and Brush Storage Area	Redevelopment Area	
Up Gradient Silt Fence	Quarter Acre Sampling Areas	DuPont Property Line	
Sensitive Habitat - No excavation	IRM Excavation- 2012	Natural Area Fence	

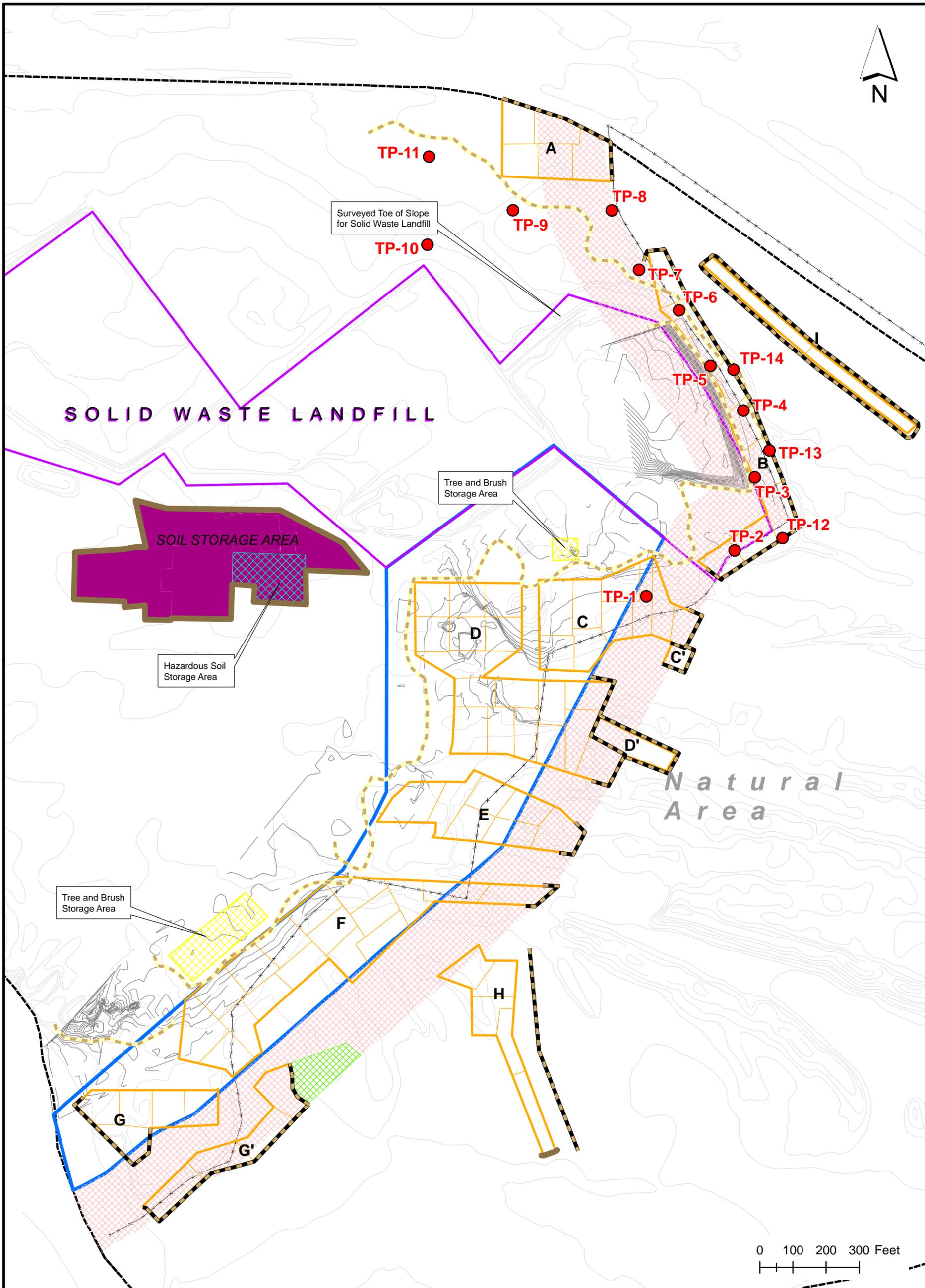
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Title: **Additional Soil Sample Locations**

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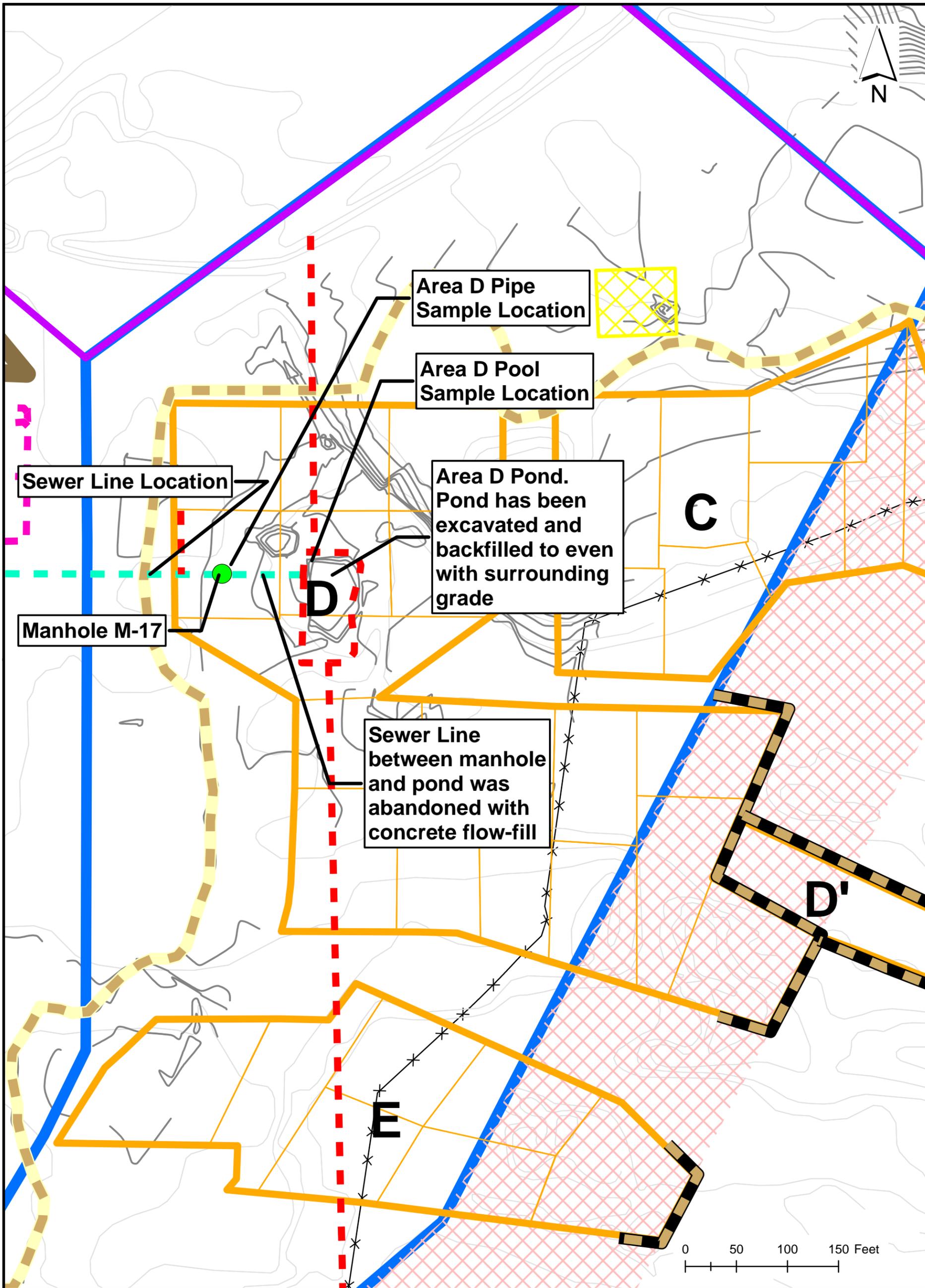
Test Pit Location	Hazardous Soils Storage Area	Buffer Zone	Surveyed Topo - 11/2011
Down Gradient Silt Fence	Soil Storage Area	Solid Waste Landfill	Sited Contours- prior to 2009
Straw Bales	Tree and Brush Storage Area	Redevelopment Area	
Up Gradient Silt Fence	Quarter Acre Sampling Areas	DuPont Property Line	
Sensitve Habitat - No excavation	IRM Excavation- 2012	Natural Area Fence	

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- Manhole
- Abandoned Process Sewer
- Existing Process Sewer
- Sanitary Sewer
- Sewer- 1957
- Storm Sewer
- Down Gradient Silt Fence
- Straw Bales
- Up Gradient Silt Fence
- Tree and Brush Storage Area
- Quarter Acre Sampling Areas
- IRM Excavation- 2012
- ▨ Buffer Zone
- ▨ Solid Waste Landfill
- ▨ Redevelopment Area
- DuPont Property Line
- Natural Area Fence
- Surveyed Topo - 11/2011
- Sitewide Contours- prior to 2009

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**Title: Area D Water Sample Locations**

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Prepared by: Muyiwa Sami	Date: 2/14/2013	DuPont Project No: 507942
Reviewed by: Keith Thompson	Figure No: 13	PARSONS Project No: 446868
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# TABLES



**TABLE 1**  
**Hazardous Soil Excavation Volume Calculation**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

Excavation Identification	Acreage	Area (Sq Ft)	Dig Depth (feet)	Volume (Cubic Yards)	Comments
HW-C1	0.045	1976.724	3.0	219.63	
HW-C2	0.014	625.932	2.5	57.96	
<b>AREA C TOTAL VOLUME</b>				277.59	
HW-D1	0.014	624.995	2.0	46.30	
HW-D2	0.014	631.499	2.0	46.78	
HW-D3	0.015	633.690	2.0	46.94	
HW-D4 and HW-D8	0.210	9133.935	2.0	676.59	HW-D4 and HW-D8 excavation areas grew into each other.
HW-D5	0.015	647.825	2.0	47.99	
HW-D6	0.015	631.897	2.0	46.81	
HW-D7	0.015	634.725	2.0	47.02	
HW-D9	0.015	637.469	2.5	59.02	
HW-D10	0.015	634.766	2.0	47.02	
<b>AREA D TOTAL VOLUME</b>				1064.47	
HW-E1	0.108	4703.607	3.0	522.62	
HW-E2	0.015	638.072	2.0	47.26	
HW-E3	0.035	1530.834	2.0	113.39	
HW-E4	0.055	2404.753	4.0	356.25	
<b>AREA E TOTAL VOLUME</b>				1039.52	
HW-F1	0.014	630.958	2.0	46.74	
HW-F2	0.014	618.080	2.0	45.78	
<b>AREA F TOTAL VOLUME</b>				92.52	
HW-G1	0.014	621.029	2.0	46.00	
<b>AREA G TOTAL VOLUME</b>				46.00	
HW-H1	0.021	919.660	2.0	68.12	
HW-H2	0.015	654.598	2.0	48.49	
HW-H3	0.015	634.766	2.0	47.02	
HW-H4	0.014	607.239	2.0	44.98	
<b>AREA H TOTAL VOLUME</b>				208.61	
BFZ-43	0.015	625.000	2.0	46.30	
<b>BFZ-43 TOTAL VOLUME</b>				46.30	
<b>Additional Soil Excavation Segregated as Hazardous from 1/4 Acre Grids</b>	<b>Acreage</b>	<b>Area (Sq Ft)</b>	<b>Haz Soil Thickness (feet)</b>	<b>Volume (Cubic Yards)</b>	<b>Comments</b>
F4	0.283	12332.422	1.0	456.74	Total excavation depth was 4-feet; however soil from 2-3 feet was removed as hazardous.
F7	0.273	11886.802	2.0	880.44	Total excavation depth was 4-feet; however soil from 2-4 feet was removed as hazardous.
F15	0.256	11130.704	2.0	824.44	Total excavation depth was 4-feet; however soil from 2-4 feet was removed as hazardous.
F17	0.258	11221.240	2.0	831.19	Total excavation depth was 4-feet; however soil from 2-4 feet was removed as hazardous.
<b>1/4 ACRE AREAS TOTAL VOLUME</b>				2992.81	

<b>HAZARDOUS SOIL TOTAL VOLUME EXCAVATED</b>	<b>5767.82</b>
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**TABLE 2**  
**Non-Hazardous Soil Excavation Volume Calculation**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

Excavation Identification	Acreage	Dig Depth (feet)	Volume (Cubic Yards)	Comments
A1	0.265	2.0	853.85	
A2	0.254	2.0	818.07	
A3	0.345	2.0	1111.85	
A4	0.251	2.0	811.19	
A5	0.253	2.0	817.63	
<b>AREA A TOTAL VOLUME</b>			<b>4412.59</b>	
C1	0.352	2.0	1135.11	Volume calculation accounts for hazardous soil removed in this area.
C2	0.252	2.0	814.52	
C3	0.298	2.0	962.96	
C4	0.251	2.0	809.63	
C5	0.233	2.0	751.04	Volume calculation accounts for hazardous soil removed in this area.
C6	0.249	2.0	803.70	
C7	0.253	2.0	816.00	
C8	0.250	2.0	805.78	
C9	0.166	2.0	536.96	
C' (C10)	0.108	2.0	347.12	
<b>AREAS C and C' TOTAL VOLUME</b>			<b>7782.82</b>	
D1	0.253	2.0	817.41	
D2	0.248	2.0	798.94	Volume calculation accounts for hazardous soil removed in this area.
D3	0.249	2.0	804.67	Volume calculation accounts for hazardous soil removed in this area.
D4	0.255	3.0	1236.35	3-foot average depth accounts for pond excavation area.
D5	0.245	2.0	791.93	Volume calculation accounts for hazardous soil removed in this area.
D6	0.252	2.0	812.74	Volume calculation accounts for hazardous soil removed in this area.
D7	0.375	2.0	1211.19	
D8	0.252	2.0	812.30	
D9	0.330	2.0	1066.00	Volume calculation accounts for hazardous soil removed in this area.
D10	0.135	2.0	435.80	Volume calculation accounts for hazardous soil removed in this area.
D11	0.263	2.0	850.15	
D12	0.251	4.0	1620.30	4-foot average depth to account for additional debris removal area.
D13	0.157	2.0	507.08	Volume calculation accounts for hazardous soil removed in this area.
D14	0.252	4.0	1626.07	4-foot average depth to account for additional debris removal area.
D15	0.252	2.0	812.07	
D16	0.281	2.0	907.48	Volume calculation accounts for hazardous soil removed in this area.
D17	0.290	2.0	934.44	
D' (D18)	0.389	2.0	1206.83	Volume calculation accounts for hazardous soil removed in this area.
<b>AREAS D and D' TOTAL VOLUME</b>			<b>17251.75</b>	
E1	0.262	3.0	1269.78	Volume calculation accounts for hazardous soil removed in this area.
E2	0.289	2.0	931.04	Volume calculation accounts for hazardous soil removed in this area.
E3	0.253	2.0	814.81	
E4	0.204	2.0	656.90	Volume calculation accounts for hazardous soil removed in this area.
E5	0.251	2.0	808.30	
E6	0.251	2.0	810.96	
E7	0.323	2.0	1043.56	
<b>AREA E TOTAL VOLUME</b>			<b>6335.35</b>	

**TABLE 2**  
**Non-Hazardous Soil Excavation Volume Calculation**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

Excavation Identification	Acreage	Dig Depth (feet)	Volume (Cubic Yards)	Comments
F1	0.256	2.0	825.48	
F2	0.253	2.0	816.59	
F3	0.252	2.0	813.63	
F4	0.283	4.0	1370.22	Total excavation depth was 4-feet; however 1-foot of soil across the entire 1/4 acre area was segregated as hazardous from the 2-3 foot interval. Volume calculation accounts for hazardous soil removed in this area.
F5	0.253	3.0	1226.11	
F6	0.256	2.0	825.41	
F7	0.273	4.0	880.45	Total excavation depth was 4-feet; however 2-feet of soil across the entire 1/4 acre area was segregated as hazardous from the 2-4 foot interval. Volume calculation accounts for hazardous soil removed in this area.
F8	0.255	2.0	822.07	
F9	0.252	2.0	812.22	
F10	0.333	4.0	2145.93	
F11	0.250	2.0	806.89	
F12	0.292	4.0	1887.11	Volume calculation accounts for hazardous soil removed in this area.
F13	0.251	2.0	811.04	
F14	0.307	4.0	1981.19	
F15	0.256	4.0	824.44	Total excavation depth was 4-feet; however 2-feet of soil across the entire 1/4 acre area was segregated as hazardous from the 2-4 foot interval. Volume calculation accounts for hazardous soil removed in this area.
F16	0.429	2.0	1384.81	
F17	0.258	4.0	831.19	Total excavation depth was 4-feet; however 2-feet of soil across the entire 1/4 acre area was segregated as hazardous from the 2-4 foot interval. Volume calculation accounts for hazardous soil removed in this area.
Area F Trench Excavation			1676.51	Trench occupied parts of F10, F12, and F14. Volume calculated from 4-6 feet in F10, 4-7 feet in F12, and 4-8 feet in F14.
<b>AREA F TOTAL VOLUME</b>			<b>20741.29</b>	
G1	0.236	2.0	762.44	Volume calculation accounts for hazardous soil removed in this area.
G2	0.252	2.0	812.52	
G3	0.252	2.0	811.78	
G4	0.249	2.0	802.81	
G5	0.252	2.0	814.30	
G' (G6)	0.280	2.0	904.30	
G' (G7)	0.267	4.0	1721.63	
G' (G8)	0.253	4.0	1631.70	
G' (G9)	0.295	2.0	950.37	
<b>AREAS G AND G' TOTAL VOLUME</b>			<b>9211.85</b>	
H1	0.248	2.0	798.96	Volume calculation accounts for hazardous soil removed in this area.
H2	0.238	2.0	768.52	Volume calculation accounts for hazardous soil removed in this area.
H3	0.252	2.0	814.15	
H4	0.189	2.0	610.18	Volume calculation accounts for hazardous soil removed in this area.
H5	0.215	2.0	694.79	Volume calculation accounts for hazardous soil removed in this area.
<b>AREA H TOTAL VOLUME</b>			<b>3686.60</b>	
I1	0.339	2.0	1093.85	
I2	0.327	2.0	1054.96	
<b>AREA I TOTAL VOLUME</b>			<b>2148.81</b>	

**TABLE 2**  
**Non-Hazardous Soil Excavation Volume Calculation**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

Excavation Identification	Acreage	Dig Depth (feet)	Volume (Cubic Yards)	Comments
<b>NON-HAZARDOUS SOIL TOTAL VOLUME EXCAVATED</b>			<b>71571.06</b>	

**TABLE 3**  
**Hazardous Soil Confirmation Laboratory Results**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**  
**Area C**

SAMPLE ID	DEPTH (Feet)	DATE	Arsenic (mg/kg)	Cadmium (mg/kg)	Lead (mg/kg)	Notes
Screening Values*			5548	235	4606	
HW-C1 NORTH WALL	0-2	10/04/12	75	14	32,000	North limit of proposed Area C excavation.
HW-C1 S,E,W WALLS	0-2	10/04/12	190	6.9	1,400	Composite of south, east, and west walls.
HW-C1 FLOOR	0-2	10/04/12	220	18	14,000	Area was covered with 2-feet of fill.
HW-C2 SIDE WALLS	0-2	10/03/12	8.7	2.5	190	Composite of all side walls.
HW-C2 FLOOR	2-2.5	09/26/12	410	170	17,000	Area was covered with 2-feet of fill.
HW-C2 FLOOR	2-2.5	09/27/12	280	120	14,000 B	Area was covered with 2-feet of fill.

**Area D and D'**

SAMPLE ID	DEPTH (Feet)	DATE	Arsenic (mg/kg)	Cadmium (mg/kg)	Lead (mg/kg)	Notes
Screening Values*			5548	235	4606	
HW-D1 NORTH WALL	0-2	09/26/12	110	7.8	20,000	North limit of proposed Area D excavation.
HW-D1 S and E WALLS	0-2	10/04/12	11	1.6	1,300	Composite of south and east walls.
HW-D1 WEST WALL	0-2	09/26/12	42	3.5	2,300 ^	
HW-D1 FLOOR	2-2.5	09/26/12	350	8.7	22,000	Area was covered with 2-feet of fill.
HW-D2	0-2	10/03/12	8.8	0.70	4.3	Composite of floor and walls.
HW-D3 NORTH WALL	0-2	09/28/12	320	93	4,100 B	
HW-D3 NORTH WALL DUP	0-2	09/28/12	330	65	3,900 B	
HW-D3 S,E,W WALLS	0-2	10/04/12	150	19	940	Composite of south, east, and west walls.
HW-D3 FLOOR	2-2.5	09/28/12	270 V	82 V	7,200 B	Area was covered with 2-feet of fill.
HW-D4 FLOOR	2-2.5	09/28/12	8.9	380	1,500 B	
HW-D4	0-2	10/12/12	38	97	1,700 B	Composite of floor and walls.
HW-D5	0-2	10/04/12	25	61	860	Composite of floor and walls.
HW-D6	0-2	09/28/12	52	190	1,500 B	Composite of floor and walls.
HW-D7	0-2	10/04/12	33	21	2,700	Composite of floor and walls.
HW-D8	0-2	10/12/12	12	4.9	120 B	Composite of floor and walls.
HW-D9	0-2	10/03/12	15	13	890	Composite of floor and walls.
HW-D10	0-2	11/09/12	8.4	40	190	Composite of floor and walls.

**Area E**

SAMPLE ID	DEPTH (Feet)	DATE	Arsenic (mg/kg)	Cadmium (mg/kg)	Lead (mg/kg)	Notes
Screening Values*			5548	235	4606	
HW-E1 N,E,W WALLS	0-2	10/18/12	18	5.2	3,700 B	Composite of north, east, and west walls.
HW-E1 SOUTH WALL	0-2	10/18/12	39	65	58,000	South limit of proposed Area E excavation.
HW-E1 FLOOR	3-3.5	11/09/12	0.21 J	0.099 J	290	All soil above the 3-foot depth was removed.
HW-E2 SIDE WALLS	0-2	10/03/12	5.1	3.2	660	Composite of all side walls.
HW-E2 FLOOR	2-2.5	10/03/12	2.0	0.23	13	
HW-E3	0-2	10/02/12	21	10	1,100 B	Composite of floor and walls.
HW-E4 N,E,W WALLS	0-2	10/12/12	1.7	4.3	220 B	Composite of north, east, and west walls.
HW-E4 SOUTH WALL	0-2	10/12/12	45	75	4,600 B	South limit of proposed Area E excavation.
HW-E4 FLOOR	4-4.5	11/09/12	3.4	4.5	1,000	All soil above the 4-foot depth was removed.

**TABLE 3**  
**Hazardous Soil Confirmation Laboratory Results**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

**Area F**

SAMPLE ID	DEPTH (Feet)	DATE	Arsenic (mg/kg)	Cadmium (mg/kg)	Lead (mg/kg)	Notes
Screening Values*			5548	235	4606	
HW-F1	0-2	10/02/12	91	58	3,100	Composite of floor and walls.
HW-F2	0-2	10/02/12	9.0	41	3,300 B	Composite of floor and walls.

**Area G**

SAMPLE ID	DEPTH (Feet)	DATE	Arsenic (mg/kg)	Cadmium (mg/kg)	Lead (mg/kg)	Notes
Screening Values*			5548	235	4606	
HW-G1	0-2	09/27/12	23	12	520 B	Composite of floor and walls.

**Area H**

SAMPLE ID	DEPTH (Feet)	DATE	Arsenic (mg/kg)	Cadmium (mg/kg)	Lead (mg/kg)	Notes
Screening Values*			5548	235	4606	
HW-H1	0-2	10/12/12	19	3.9	270 B	Composite of floor and walls.
HW-H2	0-2	10/12/12	79	7.3	1,200 B	Composite of floor and walls.
HW-H3	0-2	10/12/12	47	7.7	950 B	Composite of floor and walls.
HW-H4	0-2	10/12/12	79	9.9	930 B	Composite of floor and walls.

**BFZ-43**

SAMPLE ID	DEPTH (Feet)	DATE	Arsenic (mg/kg)	Cadmium (mg/kg)	Lead (mg/kg)	Notes
Screening Values*			5548	235	4606	
HW-BFZ-43	0-2	12/03/12	53	70	430	Composite of floor and walls. Excavation was 25'x25'x2' and was centered at the BFZ-43 boring location. Excavation was backfilled to grade upon completion.

**Notes:**

^ - Instrument related QC exceeds the control limits.

B - Compound was found in the blank and sample.

V - Serial dilution exceeds control limits.

\* - Calculated site specific hazardous soil concentrations based on total metals versus TCLP metals regression analysis.

Result detected above site specific hazardous concentration.

**TABLE 4**  
**Non-Hazardous Soil Confirmation Laboratory Results**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

**Area A**

SAMPLE ID	DEPTH (Feet)	DATE	Arsenic (mg/kg)	Cadmium (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)	NOTES
Screening Values*			5548	235	4606	NA	
A1	0-2	09/27/12	27	5.1	530 B	5,100 B	
A2	0-2	09/27/12	16	4.2	210 B	3,300 B	
A3	0-2	09/27/12	3.5	0.81	68 B	280 B	
A4	0-2	09/27/12	3.7	7.3	86 B	570 B	
A5	0-2	09/27/12	1.4	0.24 J	11 B^	78 B	
A6	0-2	09/27/12	6.4	1.4	10 B^	200 B	

**Area C and C'**

SAMPLE ID	DEPTH (Feet)	DATE	Arsenic (mg/kg)	Cadmium (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)	NOTES
Screening Values*			5548	235	4606	NA	
C1	0-2	10/15/12	15	4.7	690	3,000	Area was covered with 2-feet of fill.
C1 DUP	0-2	10/15/12	6.6	3.7	500	1,900	Area was covered with 2-feet of fill.
C2	0-2	10/15/12	19	7.2	370	1,500	Area was partially covered with 2-feet of fill.
C3	0-2	10/15/12	380	32	4,300	11,000	Area was covered with 2-feet of fill.
C4	0-2	10/15/12	7.6	25	260	3,000	Area was partially covered with 2-feet of fill.
C5	0-2	10/15/12	73	75	2,400	11,000	Area was covered with 2-feet of fill.
C6	0-2	10/15/12	29	13	990	3,700	Area was partially covered with 2-feet of fill.
C7	0-2	10/15/12	14	12	520	2,900	Area was partially covered with 2-feet of fill.
C8	0-2	10/15/12	20	11	1,500	4,600	Area was partially covered with 2-feet of fill.
C9	0-2	10/15/12	2.3	0.66	35	600	
C10	0-2	11/12/12	1.5	1.2B	9.9	310B	

**Area D and D'**

SAMPLE ID	DEPTH (Feet)	DATE	Arsenic (mg/kg)	Cadmium (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)	Notes
Screening Values*			5548	235	4606	NA	
D1	0-2	10/22/12	64	20	3,700	4,900	Area was covered with 2-feet of clean fill.
D1 DUP	0-2	10/22/12	60	18	4,100	5,900	Area was covered with 2-feet of clean fill.
D2	0-2	10/22/12	820	8.2	2,000	2,300	Area was covered with 2-feet of clean fill.
D3	0-2	10/22/12	21	4.2	490	1,200	Area was covered with 2-feet of clean fill.
D4	2-2.5	10/22/12	140	11	510	1,400	Area was covered with 2-feet of clean fill.
D5	0-2	10/22/12	8	6.3	520	3,700	Area was covered with 2-feet of clean fill.
D6	0-2	10/22/12	39	7.9	600	3,000	Area was covered with 2-feet of clean fill.
D7	0-2	10/22/12	73	16	510	2,100	Area was covered with 2-feet of clean fill.
D8	0-2	10/22/12	70	330	10,000	10,000	Area was covered with 2-feet of clean fill.
D9	0-2	10/22/12	9.5	3.2	150	260	
D10	0-2	10/22/12	25	72	1,300	1,900	Area was covered with 2-feet of clean fill.
D11	0-2	10/22/12	25	91	2,400	2,600	Area was covered with 2-feet of clean fill.
D12	0-5	10/22/12	13	7.3	270	290	
D13	0-2	10/22/12	18	8.0	160	480	
D14	0-5	10/22/12	6.4	3.5	94	390	
D15	0-2	10/22/12	5.5	23	170	500	
D16	0-2	10/22/12	5.3	6.2	160	540	
D17	0-2	10/22/12	3.0	3.4	71	430	
D18	0-2	11/20/12	5.5	5.1	41	330	
D Pond	0-5	10/15/12	130	10	98 B	NA	Pond was backfilled even with surrounding grade.

**TABLE 4**  
**Non-Hazardous Soil Confirmation Laboratory Results**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

**Area E**

SAMPLE ID	DEPTH (Feet)	DATE	Arsenic (mg/kg)	Cadmium (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)	NOTES
Screening Values*			5548	235	4606	NA	
E1	0-2	10/26/12	9.5	3.5	390	640 B	
E2	0-2	10/26/12	13	4.3	290	430 B	
E3	0-2	10/26/12	5.3	1.5	78	150 B	
E4	0-2	10/26/12	3.0	0.54	25	75 B	
E5	0-2	10/26/12	2.3	2.3	46	330 B	
E6	0-2	10/26/12	2.5	1.1	24	170 B	
E7	0-2	10/26/12	1.9	5.1	17	720 B	

**Area F**

SAMPLE ID	DEPTH (Feet)	DATE	Arsenic (mg/kg)	Cadmium (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)	Notes
Screening Values*			5548	235	4606	NA	
F1	0-2	10/25/12	5.0	5.5	240	1,100 B	
F2	0-2	10/25/12	4.9	5.2	67	1,900 B	
F2 DUP	0-2	10/25/12	3.7	4.7	45	1,100 B	
F3	0-2	10/25/12	2.9	1.1	20	360 B	
F4	0-4	12/13/12	6.7	1.0	97 B	120	All soil above 4-feet was removed.
F5	4-4.5	12/13/12	6.0	7.0	48 B	430	All soil above 4-feet was removed.
F6	0-2	10/25/12	4.3	3.2	110	610 B	
F7	0-4	12/13/12	1.0	0.47	25 B	47	All soil above 4-feet was removed.
F8	2-2.5	10/25/12	2.6	2.0	40	320 B	
F9	0-2	10/25/12	2.8	3.4	170	620 B	
F10	0-4	12/13/12	0.85 J	58	38 B	350	All soil above 4-feet was removed.
F11	0-2	10/25/12	1.8	0.98	18	250 B	
F12	0-4	12/12/12	7.5	41	520	3,100	All soil above 4-feet was removed.
F13	0-2	10/26/12	10	6.2	160	970 B	
F13 DUP	0-2	10/25/12	17	8.2	240	1,300 B	
F14	0-4	12/12/12	21	84	2,100	4,600	All soil above 4-feet was removed.
F15	0-4	12/07/12	2.8	0.62	6.9 B	1,000	All soil above 4-feet was removed.
F16	0-2	10/26/12	32	12	530	1,400 B	
F17	0-4	12/05/12	5.0	1.7	110 B	380	All soil above 4-feet was removed.

**Area G and G'**

SAMPLE ID	DEPTH (Feet)	DATE	Arsenic (mg/kg)	Cadmium (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)	Notes
Screening Values*			5548	235	4606	NA	
G1	0-2	10/11/12	16 V	11	420 B	1,300 V	
G2	0-2	10/11/12	18	7.9	280 B	1,700	
G3	0-2	10/11/12	6.9	3.7	130 B	890	
G4	0-2	10/11/12	19	7.4	480 B	1,300	
G5	0-2	10/11/12	12	7.6	130	1,500 B	
G5 DUP	0-2	10/11/12	11	7.4	120	1,400 B	
G6	0-2	10/11/12	11	7.8	190 B	1,600	
G7	4-4.5	12/03/12	5.6	0.24 J	7.0	450	All soil above 4-feet was removed.
G8	4-4.5	12/03/12	3.5	0.50	7.6	120	All soil above 4-feet was removed.
G9	0-2	10/11/12	5.9	2.6	60 B	490	

**TABLE 4**  
**Non-Hazardous Soil Confirmation Laboratory Results**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

**Area H**

SAMPLE ID	DEPTH (Feet)	DATE	Arsenic (mg/kg)	Cadmium (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)	NOTES
Screening Values*			5548	235	4606	NA	
H1	0-2	10/31/12	5.9	2.4	12	290 B	
H1 DUP	0-2	10/31/12	7.9	3.2	17	360 B	
H2	0-2	10/31/12	5.7	0.089 J	3.2	33 B	
H3	0-2	10/31/12	0.47	2.0	<0.067	38 B	
H4	0-2	10/31/12	1.2	0.17	11	37 B	
H5	0-2	10/31/12	26	2.9	560	660 B	

**Area I**

SAMPLE ID	DEPTH (Feet)	DATE	Arsenic (mg/kg)	Cadmium (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)	NOTES
Screening Values*			5548	235	4606	NA	
I1	0-2	11/19/12	1.5	0.17 J	2.6	160	
I2	0-2	11/19/12	1.7	0.21 J	4.6	230	

**Notes:**

^ - Instrument related QC exceeds the control limits.

B - Compound was found in the blank and sample.

J - Result is less than the RL but greater than or equal to the MDL, and the concentration is an approximate value.

V - Serial dilution exceeds control limits.

NA - Not analyzed or not applicable.

\* - Calculated site specific hazardous soil concentrations based on total metals versus TCLP metals regression analysis.

  Result detected above site specific hazardous concentration.

**TABLE 5**  
**Area F Trench Soil Sampling Results**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

SAMPLE ID	DEPTH (Feet)	DATE	Arsenic (mg/kg)	Cadmium (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)
<b>Screening Values*</b>			<b>5548</b>	<b>235</b>	<b>4606</b>	<b>NA</b>
TS-1	6-6.5	12/14/12	0.82 J	29	19 B	1,200
TS-2	6-6.5	12/14/12	5.8	370	66 B	140
TS-3	7-7.5	12/14/12	3.3	320	89 B	8,900
TS-4	7-7.5	12/14/12	2	76	3.6 B	5,500
TS-5	7-7.5	12/14/12	1.3	0.072 J	2.8 B	540

**Notes:**

B - Compound was found in the blank and sample.

J - Result is less than the RL but greater than or equal to the MDL, and the concentration is an approximate value.

NA - Not applicable.

\* - Calculated site specific hazardous soil concentrations based on total metals versus TCLP metals regression analysis.

**TABLE 6**  
**Buffer Zone Soil Sampling Results**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

SAMPLE ID	DEPTH (Feet)	DATE	Arsenic (mg/kg)	Cadmium (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)	Notes
<b>Screening Values*</b>			<b>5548</b>	<b>235</b>	<b>4606</b>	<b>NA</b>	
BFZ-32	0-2	10/23/12	56	40	4,600	8,800 B	
BFZ-33	0-2	10/23/12	41	14	940	4,400 B	
BFZ-34	0-2	12/10/12	0.93 J	3.2	6.6 B	120 B	
BFZ-35	0-2	12/10/12	1.1 J	1.9	8.3 B	120 B	
BFZ-36	0-2	12/10/12	2.1	1.4	9.3 B	250 B	
BFZ-37	0-2	10/23/12	5	8.8	300	880 B	
BFZ-37 DUP	0-2	10/23/12	5.7	10	370	940 B	
BFZ-38	0-2	10/23/12	2.4	1.8	55	380 B	
BFZ-39	0-2	10/23/12	3.1	3.0	32	600	
BFZ-40	0-2	10/23/12	2.3	3.4	42	630 B	
BFZ-41	0-2	10/24/12	1.5	0.32	11 B	88	
BFZ-42	0-2	10/24/12	1.3	3	32	270	
BFZ-43	0-2	10/26/12	140	150	<b>5,500</b>	16,000	Soil removed as hazardous on 12/3/12 with a 25'x25'x2' excavation. Area was covered with 2-feet of fill.
BFZ-44	0-2	10/24/12	65	25	1,000 B	9,300	
BFZ-45	0-2	10/24/12	7.1	7.1	54 B	1,300	
BFZ-46	0-2	10/24/12	14	5.7	120 B	1,600	
BFZ-47	0-2	10/24/12	3.9	2.1	85 B	810	
BFZ-48	0-2	10/24/12	16	18	610 B	1,700	

**Notes:**

B - Compound was found in the blank and sample.

NA - Not analyzed or not applicable.

\* - Calculated site specific hazardous soil concentrations based on total metals versus TCLP metals regression analysis.

  Result detected above site specific hazardous concentration.

**TABLE 7**  
**Meteorological Monitoring Statistics**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

Time Period	Parameter	Units	Minimum	Maximum	Average
Complete (9/12/12 - 12/17/12)	Wind Speed (WS)	mph	0.6	21.5	6.1
	Max WS Gust	mph		41.1	
	Wind Direction	deg	0.2	360	196
	Temperature	F	20.8	86	48.9
	Relative Humidity	%	1.8	98.3	67.8
	Barometric Pressure	"Hg	28.59	31.43	29.29
	Precipitation (Rain)	inches	0.00	0.16	5.06*
September (9/12/12 - 9/30/12)	Wind Speed (WS)	mph	0.6	17.2	4.9
	Max WS Gust	mph		29.8	
	Wind Direction	deg	0.4	360	202
	Temperature	F	39.5	86	60.8
	Relative Humidity	%	1.8	96.7	63.4
	Barometric Pressure	"Hg	29.02	29.69	29.33
	Precipitation (Rain)	inches	0.00	0.09	0.6*
October (10/1/12 - 10/31/12)	Wind Speed (WS)	mph	0.6	21.5	7.3
	Max WS Gust	mph		38.7	
	Wind Direction	deg	0.3	360	198
	Temperature	F	32.8	80.1	52.6
	Relative Humidity	%	1.8	96.6	67.3
	Barometric Pressure	"Hg	28.59	30.72	29.20
	Precipitation (Rain)	inches	0.00	0.16	3.14*
November (11/1/12 - 11/30/12)	Wind Speed (WS)	mph	0.6	19.5	5.4
	Max WS Gust	mph		41.1	
	Wind Direction	deg	0.2	360	189
	Temperature	F	20.8	69.9	41.0
	Relative Humidity	%	3.9	96.4	67.2
	Barometric Pressure	"Hg	28.97	31.02	29.37
	Precipitation (Rain)	inches	0.00	0.09	0.61*
December (12/1/12 - 12/17/12)	Wind Speed (WS)	mph	0.7	15.3	6.4
	Max WS Gust	mph		30.4	
	Wind Direction	deg	0.4	360	195
	Temperature	F	25.4	70.8	42.7
	Relative Humidity	%	35.6	98.3	74.7
	Barometric Pressure	"Hg	28.81	31.43	29.24
	Precipitation (Rain)	inches	0.00	0.04	0.71*

**Notes:**

Statistics based on 15-min averages.

\* Value is not an average. It is the total precipitation for the given time period.

**TABLE 8**  
**Real Time Air Monitoring Measurements**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

DATE	TIME	LOCATION	TOTAL DUST (mg/m <sup>3</sup> )
<b>Health and Safety Plan Action Level</b>			<b>2.5</b>
9/18/2012	11:30	Area C	0.089
	11:30	Area A	0.010
	16:00	Area C	0.071
	16:30	Area A	0.009
9/19/2012	10:30	Area C	0.023
	10:30	Area A	0.060
	15:30	Area C	0.081
	15:30	Area A	0.043
	15:30	Stockpile	0.052
9/20/2012	10:00	Area A	0.021
	10:00	Stockpile	0.051
	16:20	Area A	0.059
	16:20	Stockpile	0.061
9/21/2012	9:45	Area A	0.002
	9:45	Area G	0.007
	9:45	Stockpile	0.015
Due to rain, no dust monitoring performed in the afternoon of 9/21/12.			
9/24/2012	8:30	Area A	0.015
	8:30	Area F	0.106
	8:30	Stockpile	0.016
	14:00	Area A	0.075
	14:00	Area F	0.047
	14:00	Stockpile	0.040
9/25/2012	12:45	Area A	0.101
	12:45	Area F	0.090
	12:45	Area C	0.039
	12:45	Stockpile	0.047
9/26/2012	10:00	Area A	0.078
	10:00	Area C	0.102
	10:00	Area D	0.107
	12:55	Area A	0.105
	13:15	Area D	0.251
9/27/2012	12:25	Area A	0.061
	12:25	Area C	0.021
	12:25	Stockpile	0.034
9/28/2012	9:30	Area D	0.178
	9:30	Area G	0.032
	9:30	Stockpile	0.055
	15:30	Area D	0.203
	15:30	Area G	0.032
	15:30	Stockpile	0.056
10/1/2012	9:00	Area E	0.077
	9:00	Area F	0.109
	9:00	Stockpile	0.131
	13:00	Area E	0.083
	13:00	Area F	0.115
	13:00	Stockpile	0.099
10/2/2012	8:00	Area C	0.049
	8:00	Area F	0.019
	8:00	Stockpile	0.044
	16:00	Area C	0.061
	16:00	Area F	0.076
	16:00	Stockpile	0.102

**TABLE 8**  
**Real Time Air Monitoring Measurements**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

DATE	TIME	LOCATION	TOTAL DUST (mg/m <sup>3</sup> )
<b>Health and Safety Plan Action Level</b>			<b>2.5</b>
10/3/2012	8:45	Area C	0.031
	8:45	Area D	0.078
	8:45	Stockpile	0.113
	13:30	Area C	0.067
	13:30	Area D	0.085
	13:30	Stockpile	0.121
10/4/2012	8:15	Area C	0.046
	8:15	Area D	0.031
	8:15	Stockpile	0.063
	12:45	Area C	0.079
	12:45	Area D	0.095
	12:45	Stockpile	0.088
10/5/2012	9:00	Area D	0.078
	9:00	Area E	0.033
	9:00	Stockpile	0.055
Due to rain, no dust monitoring performed in the afternoon of 10/5/12.			
10/8/2012	8:00	Area D	0.059
	8:00	Area G'	0.041
	8:00	Stockpile	0.037
	16:00	Area D	0.046
	16:00	Area G'	0.039
	16:00	Stockpile	0.079
10/9/2012	9:30	Area C	0.065
	9:30	Area G'	0.041
	9:30	Stockpile	0.081
	15:00	Area C	0.078
	15:00	Area G'	0.066
	15:00	Stockpile	0.103
10/10/2012	11:00	Area D	0.077
	11:00	Area F	0.099
	11:00	Stockpile	0.068
	13:00	Area D	0.067
	13:00	Area F	0.029
	13:00	Stockpile	0.089
10/11/2012	8:15	Area D	0.290
	8:15	Area H	0.076
	8:15	Stockpile	0.351
	13:00	Area D	0.303
	13:00	Area H	0.059
	13:00	Stockpile	0.271
10/12/2012	9:00	Area D	0.071
	9:00	Stockpile	0.211
	15:00	Area D	0.099
	15:00	Stockpile	0.097
10/15/2012	10:30	Area D	0.044
	10:30	Stockpile	0.051
	15:00	Area D	0.027
	15:00	Stockpile	0.019
10/16/2012	11:10	Area D	0.019
	11:10	Stockpile	0.002
	15:00	Area D	0.020
	15:00	Stockpile	0.041

**TABLE 8**  
**Real Time Air Monitoring Measurements**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

DATE	TIME	LOCATION	TOTAL DUST (mg/m <sup>3</sup> )
<b>Health and Safety Plan Action Level</b>			<b>2.5</b>
10/17/2012	8:25	Area D	0.022
	8:25	Stockpile	0.103
	13:00	Area D	0.019
	13:00	Stockpile	0.100
10/18/2012	11:00	Area D	0.042
	11:00	Stockpile	0.061
10/19/2012	Due to heavy rain excavation work was cancelled for the day.		
10/22/2012	8:00	Area H	0.009
	8:00	Stockpile	0.041
	15:00	Area H	0.019
	15:00	Stockpile	0.082
10/23/2012	Due to heavy rain excavation work was cancelled for the day.		
10/24/2012	8:30	Stockpile	0.009
	14:10	Area H	0.011
	14:10	Stockpile	0.015
10/25/2012	8:10	Area E	0.031
	8:10	Stockpile	0.015
	14:15	Area E	0.020
	14:15	Stockpile	0.009
10/26/2012	8:15	Area E	0.009
	8:15	Stockpile	0.015
	14:00	Area H	0.078
	14:00	Stockpile	0.101
10/29/2012	8:30	Area H	0.081
	8:30	Stockpile	0.103
	14:00	Area H	0.078
	14:00	Stockpile	0.012
10/30/2012	10:30	Area H	0.015
	10:30	Stockpile	0.036
	13:30	Area H	0.019
	13:30	Stockpile	0.020
10/31/2012	8:00	Area H	0.017
	8:00	Stockpile	0.013
	13:00	Area H	0.008
	13:00	Stockpile	0.019
11/1/2012	No site activities occurred on 11/1/2012.		
11/2/2012	No site activities occurred on 11/2/2012.		
11/5/2012	8:30	Area C	0.014
	8:30	Stockpile	0.009
	14:00	Area C	0.020
	14:00	Stockpile	0.018
11/6/2012	8:30	Area C	0.008
	8:30	Stockpile	0.005
	14:00	Area C	0.009
	14:00	Stockpile	0.006
11/7/2012	8:30	Area C	0.007
	8:30	Area D	0.005
	14:00	Area C	0.007
	14:00	Area D	0.009
11/8/2012	8:30	Area C	0.006
	15:00	Area C	0.010

**TABLE 8**  
**Real Time Air Monitoring Measurements**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

DATE	TIME	LOCATION	TOTAL DUST (mg/m <sup>3</sup> )
<b>Health and Safety Plan Action Level</b>			<b>2.5</b>
11/9/2012	11:30	Area D	0.010
	11:30	Stockpile	0.017
	14:00	Area C	0.019
	14:00	Stockpile	0.007
11/12/2012	10:30	Area C	0.011
	10:30	Area I	0.008
	10:30	Stockpile	0.006
	15:30	Area D	0.013
	15:30	Area I	0.009
	15:30	Stockpile	0.010
11/13/2012	8:00	Area C	0.009
	8:00	Area E	0.006
	8:00	Stockpile	0.012
	13:00	Area C	0.012
	13:00	Area E	0.008
	13:00	Stockpile	0.009
11/14/2012	10:00	Area C	0.010
	10:00	Area I	0.007
	10:00	Stockpile	0.009
	15:00	Area C	0.012
	15:00	Area I	0.009
	15:00	Stockpile	0.010
11/15/2012	8:00	Area C	0.010
	8:00	Area I	0.007
	8:00	Stockpile	0.009
		Area C	0.012
		Area I	0.009
		Stockpile	0.008
11/16/2012	8:00	Area D	0.011
	8:00	Area I	0.010
	8:00	Stockpile	0.009
	13:30	Area D	0.013
	13:30	Area I	0.009
	13:30	Stockpile	0.010
11/19/2012	7:30	Area D	0.014
	7:30	Area I	0.008
	7:30	Stockpile	0.010
	14:00	Area D	0.013
	14:00	Area D'	0.010
	14:00	Stockpile	0.009
11/20/2012	8:00	Area D	0.022
	8:00	Area D'	0.020
	8:00	Stockpile	0.105
	15:00	Stockpile	0.005
11/21/2012	8:00	Area D	0.011
	8:00	Stockpile	0.006
	12:00	Area D	0.010
	12:00	Stockpile	0.009
11/26/2012	9:00	Area G	0.007
	13:30	Area G	0.009

**TABLE 8**  
**Real Time Air Monitoring Measurements**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

DATE	TIME	LOCATION	TOTAL DUST (mg/m <sup>3</sup> )
<b>Health and Safety Plan Action Level</b>			<b>2.5</b>
11/27/2012	9:30	Area G	0.006
	14:00	Area G	0.007
11/28/2012	9:15	Area G	0.007
	14:30	Area G	0.007
11/29/2012	10:00	Area G	0.004
	13:15	Area G	0.009
11/30/2012	8:30	Area G	0.005
	14:00	Area G	0.007
12/3/2012	9:00	Area G	0.008
	12:30	Area G	0.011
12/4/2012	9:30	Area F	0.007
	13:00	Area F	0.008
12/5/2012	8:30	Area F	0.005
	15:00	Area F	0.009
12/6/2012	9:00	Area F	0.004
	13:30	Area F	0.006
12/7/2012	8:30	Area F	0.006
	14:30	Area F	0.011
12/10/2012	9:00	Area F	0.007
	13:00	Area F	0.009
12/11/2012	11:15	Area F	0.010
	13:45	Area F	0.009
12/12/2012	8:30	Area F	0.006
	13:30	Area F	0.010
12/13/2012	8:00	Area F	0.007
	15:00	Area F	0.011

**Notes:**

Dust measurements collected with a PDR-1000 Dataram.

**TABLE 8**  
**Real Time Air Monitoring Measurements Summary**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

Location	Number of Readings	Total Dust Minimum Concentration (mg/m <sup>3</sup> )	Total Dust Maximum Concentration (mg/m <sup>3</sup> )	Total Dust Average Concentration (mg/m <sup>3</sup> )
All Locations	226	0.002	0.351	0.0441
Area A	13	0.002	0.105	0.0492
Area C	30	0.006	0.102	0.0356
Area D	35	0.005	0.303	0.0698
Area D'	2	0.010	0.020	0.015
Area E	8	0.006	0.083	0.0334
Area F	25	0.004	0.115	0.0326
Area G	15	0.004	0.032	0.0105
Area G'	4	0.039	0.066	0.0468
Area H	12	0.008	0.081	0.0392
Area I	9	0.007	0.01	0.0084
Stockpile	72	0.002	0.351	0.0527

Notes:

Dust measurements collected with a PDR-1000 Dataram.

**TABLE 9**  
**PM<sub>10</sub> Dust and Metals Filter Sample Results**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

Sample Identification	Sample Date	Sample Location	Sample Time (hours)	Air Volume (liters)	PM10 (ug/m3)	Arsenic (ug/m3)	Cadmium (ug/m3)	Lead (ug/m3)	Comments
090712-1	9/14/2012	Area A	8	8118	37	0.007428 J	-- ND	0.01944 J	Background sample; Area A 85' south of MW-2
090712-2	9/20/2012	Area A	8	8168	65	0.006011 J	0.0002938 J	0.03002 J	Area A - 40' south of MW-2
090712-3	9/25/2012	Stockpile	8	8052	110	0.009948 J	0.003490 J	0.2810	North of soil stockpile
090712-4	10/1/2012	Area F	8	8068	73	0.03716	0.009358 J	0.6603	Northwest of Area F
090712-5	10/10/2012	Stockpile	9	8835	55	0.01257	0.01004 J	1.108	Approx. 100' east-southeast of haz soil pile.
090712-7	10/16/2012	Stockpile	8	8240	52	0.005655 J	0.0007888 J	0.3142	100 feet south of non-hazardous stockpile
090712-8	10/17/2012	Stockpile	8	7270	37	-- ND	0.004553 J	0.1840	Field Duplicate - same location as 10/16 sample.
090712-9	10/24/2012	Stockpile	8	7500	29	-- ND	0.001200 J	0.04517 J	Approx. 150' north of stockpile
090712-11	10/31/2012	Stockpile	8	8040	15	-- ND	0.001244 J	0.28080	Approx. 160' south-southeast of stockpile
090712-12	11/7/2012	Area C	8	7980	40	-- ND	0.002807 J	0.02749 J	Approx. 200' west-northwest of Area C backfill activity
090712-13	11/8/2012	Area C	8	8220	34	-- ND	0.001204 J	0.03375 J	Field Duplicate - same location as 11/7 sample.
090712-14	11/14/2012	Area C	8	8040	15	-- ND	0.001132 J	0.01195 J	Approx. 200' west-northwest of Area C backfill activity
090712-15	11/15/2012	Area C	8	7860	34	-- ND	0.003753 J	0.03075 J	Field Duplicate - same location as 11/14 sample.
090712-16	11/20/2012	Stockpile	8	7060	85	-- ND	0.005198 J	0.28130	Approx. 135' north of stockpile
090712-18	11/27/2012	Stockpile	8	7030	< 14	-- ND	0.002262 J	0.05292 J	Approx. 35' southeast of stockpile
090712-38	12/4/2012	SW Tree Stockpile	8	7140	17	-- ND	0.001947 J	0.02202 J	Approx. 62 yards southwest of tree stockpile
090712-19	12/10/2012	Area F	8	7340	19	-- ND	0.001485 J	0.02169 J	North of Area F approx. 200' east-northeast of excavation work

**REFERENCE VALUES:**

IRM Safety Plan Action Levels	<b>PM10</b> 2500	<b>Arsenic</b> 10	<b>Cadmium</b> 5	<b>Lead</b> 50
Reported Bkgd Air Conc. for Metals:		< 0.001 - 0.03	<0.01	0.01 - 0.28
Baseline Air Sampling Max/High Avg:		0.0029/0.0025	0.0007/0.0004	0.2/0.1

**Notes:**

ND = Not detected at the MDL; J = estimated value (value is between MDL and RL)

Site-specific TWA's based on 8-hour exposure.

These are the typical background levels as reported in the literature.

Baseline air sampling was conducted at the site from September to December 2010.

Baseline air sampling results are based on 24-hour sampling; High average is the highest sampling event average.

**TABLE 9**  
**PM10 Dust and Metals Filter Blank Sample Results**  
**2012 Interim Remedial Measures**

Sample Identificati	Field Blank Date	Field Blank Location	Sample Time (hours)	Air Volume (liters)	PM10 (ug/filter)	PM10* (ug/m <sup>3</sup> )	Arsenic (ug/filter)	Arsenic* (ug/m <sup>3</sup> )	Cadmium (ug/filter)	Cadmium* (ug/m <sup>3</sup> )	Lead (ug/filter)	Lead* (ug/m <sup>3</sup> )	Comments
090712-6	10/11/2012	Stockpile	--	--	20	D 2.5	0.008	ND 0.001	0.0007	ND 0.00009	0.1154	D 0.01443	Approx. 100' ESE of haz soil pile.
090712-10	10/25/2012	Stockpile	--	--	20	D 2.5	0.008	ND 0.001	0.0007	ND 0.00009	0.0030	ND 0.00038	Approx 150' north of stockpile
090712-17	11/21/2012	Stockpile	--	--	40	D 5	0.008	ND 0.001	0.0104	D 0.00130	0.0065	D 0.00081	Approx 135' north of stockpile
<b>Field Blank Average:</b>					26.7	3.3	0.008	0.001	0.00393	0.00049	0.04163	0.00520	Averages for a total of 3 field blanks

Notes: D = detected; ND = Not detected  
For the purpose of Field Blank calculations, non-detects are reported as one-half the MDL value in ug/filter.  
\* Air concentrations in ug/m<sup>3</sup> are based on a nominal run time of 8 hours at 16.67 lpm flow (sample volume of 8,000 liters).

**TABLE 10**  
**2012 Interim Remedial Measures**  
**Additional Soil Sampling Results**  
**DuPont - East Chicago, Indiana**

SAMPLE ID	TOTAL ALUMINUM	TOTAL ANTIMONY	TOTAL ARSENIC	TOTAL BARIUM	TOTAL BERYLLIUM	TOTAL CADMIUM	TOTAL CALCIUM	TOTAL CHROMIUM	TOTAL COBALT	TOTAL COPPER	TOTAL IRON
SP-1 (0.5 - 1)	330	1.6 J	4.7	150	0.11 J	2.6	140,000	2.3	0.12 J	9.6	710
SP-2 (0.5 - 1)	400	<0.36	0.97 J	28	0.19 J	0.78	130,000	1.9	0.078 J	1.1 J	560
SP-3 (0.5 - 1)	700	<0.33	0.81 J	16	0.81 J	0.86	110,000	1.4	<0.065	2.8	210

**Notes:**

Concentrations reported in milligrams per kilogram (mg/kg).

B - Compound was found in the blank and sample.

J - Result is less than the RL but greater than or equal to the MDL, and the concentration is an approximate value.

**TABLE 10**  
**2012 Interim Remedial Measures**  
**Additional Soil Sampling Results**  
**DuPont - East Chicago, Indiana**

SAMPLE ID	TOTAL LEAD	TOTAL MAGNESIUM	TOTAL MANGANESE	TOTAL MERCURY	TOTAL NICKEL	TOTAL POTASSIUM	TOTAL SELENIUM	TOTAL SILVER	TOTAL SODIUM	TOTAL THALLIUM	TOTAL VANADIUM	TOTAL ZINC
SP-1 (0.5 - 1)	170	39	6.7	0.86	0.77 J	69 J	<0.43	0.39 J	230 B	<0.39	1.1	380
SP-2 (0.5 - 1)	33	17	12	0.018 J	<0.3	52 J	<0.39	0.14 J	130 JB	<0.35	0.72	19
SP-3 (0.5 - 1)	26	17	5.2	0.033	<0.27	33 J	<0.35	0.11 J	130 B	<0.32	0.45 J	32

**Notes:**

Concentrations reported in milligrams per kilogram (mg/kg).

B - Compound was found in the blank and sample.

J - Result is less than the RL but greater than or equal to the MDL, and the concentration is an approximate value.

**TABLE 10**  
**2012 Interim Remedial Measures**  
**Additional Soil Sampling Results**  
**DuPont - East Chicago, Indiana**

SAMPLE ID	TCLP ARSENIC	TCLP BARIUM	TCLP CADMIUM	TCLP CHROMIUM	TCLP LEAD	TCLP MERCURY	TCLP SELENIUM	TCLP SILVER
SP-1 (0.5 - 1)	0.015 J	0.037 J	0.042	<0.01	0.43	0.00013 JB	<0.01	<0.0050
SP-2 (0.5 - 1)	--	0.043 J	0.0029 J	<0.01	0.027 J	0.000049 JB	<0.01	<0.0050
SP-3 (0.5 - 1)	--	0.063	0.0074	<0.01	0.05	0.000043 JB	<0.01	<0.0050

**Notes:**

Concentrations reported in milligrams per liter (mg/L).

TCLP - Toxicity characteristic leaching procedure

B - Compound was found in the blank and sample.

J - Result is less than the RL but greater than or equal to the MDL, and the concentration is an approximate value.

**TABLE 11**  
**Area D Water Sampling Results**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

SAMPLE ID	DATE	TYPE	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BORON	CADMIUM	CALCUIM	CHROMIUM	COBALT	IRON
<b>IDEM SCREENING LEVELS <sup>(1)</sup></b>			<b>16</b>	<b>0.006</b>	<b>0.01</b>	<b>2</b>	<b>3.1</b>	<b>0.005</b>	<b>-</b>	<b>0.1</b>	<b>0.0047</b>	<b>11</b>
AREA D PIPE-POND <sup>(2)</sup>	11/8/2012	Total	3.4	<b>0.039</b>	<b>30</b>	0.035	0.25	<b>0.027 V</b>	300	0.0049 J	0.0020 J	<b>12</b>
AREA D PIPE <sup>(3)</sup>	11/14/2012	Total	4.3	<b>0.099</b>	<b>54</b>	0.059	0.27	<b>0.15</b>	300	0.0088 J	0.0026 J	<b>14</b>
AREA D PIPE DISSOLVED <sup>(3)</sup>	11/14/2012	Dissolved	2.9	<b>0.065</b>	<b>46</b>	0.026	0.27	<b>0.11</b>	300	0.0030 J	0.0023 J	<b>12</b>
AREA D POOL <sup>(4)</sup>	11/14/2012	Total	0.27	<b>0.021</b>	<b>2.5</b>	0.033	0.30	<b>0.0065</b>	380	0.0011 J	0.0031 J	2.7
AREA D POOL DISSOLVED <sup>(4)</sup>	11/14/2012	Dissolved	0.13 J	<b>0.012</b>	<b>1.1</b>	0.032	0.31	0.0036	390	<00096	0.0030 J	0.18 J

**Notes:**

Concentrations reported in milligrams per liter (mg/L).

B - Compound was found in the blank and sample.

J - Result is less than the RL but greater than or equal to the MDL, and the concentration is an approximate value.

V - Serial Dilution exceeds the control limits.

IDEM - Indiana Department of Environmental Management

(1) - Screening values are the Residential Groundwater Direct Contact screening values obtained from the IDEM Remediation Closure Guide dated March 2012. Consistent with U.S. EPA, IDEM does not provide screening levels for commercial/industrial groundwater direct contact or commercial/industrial migration to groundwater scenarios.

(2) - Area D PIPE-POND sample was collected at the storm/sewer pipe where the out-flow met the pond.

(3) - Area D PIPE sample was collected from the storm/sewer pipe at the adjacent manhole upgradient / west of the pond.

(4) - AREA D POOL sample was collected at the pond.

**Detected concentration exceeds applicable IDEM screening level.**

**TABLE 11**  
**Area D Water Sampling Results**  
**2012 Interim Remedial Measures**  
**DuPont - East Chicago, Indiana**

SAMPLE ID	DATE	TYPE	LEAD	MAGNESIUM	NICKEL	POTASSIUM	SELENIUM	SILICON	SODIUM	TITANIUM	VANADIUM	ZINC
<b>IDEM SCREENING LEVELS<sup>(1)</sup></b>			<b>0.015</b>	-	<b>0.3</b>	-	<b>0.05</b>	-	-	-	<b>0.078</b>	<b>4.7</b>
AREA D PIPE-POND <sup>(2)</sup>	11/8/2012	Total	<b>0.058</b>	18	0.015	5.7 B	0.0051 J	18	28 B	0.022 V	0.014	4.6 B
AREA D PIPE <sup>(3)</sup>	11/14/2012	Total	<b>0.19</b>	20	0.0095 J	5.1	0.0096 JB	23	16	0.056	0.023	2.7
AREA D PIPE DISSOLVED <sup>(3)</sup>	11/14/2012	Dissolved	0.0038 J	20	0.0090 J	5.1	0.0063 JB	22	16	0.0035 J	0.015	2.4
AREA D POOL <sup>(4)</sup>	11/14/2012	Total	0.012	19	0.011	5.8	0.0034 JB	19	63	0.0044 J	0.0017 J	1.4
AREA D POOL DISSOLVED <sup>(4)</sup>	11/14/2012	Dissolved	0.0024 J	20	0.012	6	0.0047 JB	19	64	0.0033 J	0.00097 J	1.3

**Notes:**

Concentrations reported in milligrams per liter (mg/L).

B - Compound was found in the blank and sample.

J - Result is less than the RL but greater than or equal to the MDL, and the concentration is an approximate value.

V - Serial Dilution exceeds the control limits.

IDEM - Indiana Department of Environmental Management

(1) - Screening values are the Residential Groundwater Direct Contact screening values obtained from the IDEM Remediation Closure Guide dated March 2012. Consistent with U.S. EPA, IDEM does not provide screening levels for commercial/industrial groundwater direct contact or commercial/industrial migration to groundwater scenarios.

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(3) - Area D PIPE sample was collected from the storm/sewer pipe at the adjacent manhole upgradient / west of the pond.

(4) - AREA D POOL sample was collected at the pond.

**Detected concentration exceeds applicable IDEM screening level.**

# **APPENDIX A PERMITS**





# INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

*We Protect Hoosiers and Our Environment.*

*Mitchell E. Daniels Jr.*  
Governor

*Thomas W. Easterly*  
Commissioner

100 North Senate Avenue  
Indianapolis, Indiana 46204  
(317) 232-8603  
Toll Free (800) 451-6027  
[www.idem.IN.gov](http://www.idem.IN.gov)

April 11, 2012

VIA CERTIFIED MAIL 91 7190 0005 2710 0020 8071

Mr. Sathya V. Yalvigi  
4417 Lancaster Pike CRP 715/218  
Wilmington, DL 19805

Dear Mr. Yalvigi:

Re: Section 401 Water Quality Certification  
Project: Buffer Zone Interim  
Remediation Measures, Dupont  
East Chicago, Indiana  
IDEM No.: 2012-013-45-MTM-A  
County: Lake

The Office of Water Quality has reviewed your application for Section 401 Water Quality Certification dated January 15, 2012, and received January 24, 2012. According to the application, you propose to excavate and re-contour seven wetland areas totaling 7.36 acres (5.98 acres of emergent wetland and 1.38 acres of forested wetland). The purpose of the work is to remove contaminated soil and prevent transport of contaminated soil into the Natural Area. The work is the implementing of Interim Remedial Measures under the Resource Conservation and Recovery Act. The Natural Area is a 172 acre portion of the project site that in 2009 DuPont gave IDNR a conservation easement. Presently, DuPont, IDNR and the Nature Conservancy are working together to protect, restore, and manage the area. The project is located in the Northwest ¼ of Section 34 of Township 37 North and Range 9 West in East Chicago, Lake County.

Based on available information, it is the judgment of this office that the proposed project will comply with the applicable provisions of 327 IAC 2 and Sections 301, 302, 303, 306, and 307 of the Clean Water Act if you comply with the conditions set forth below. Therefore, subject to the following conditions, the Indiana Department of Environmental Management (IDEM) hereby grants Section 401 Water Quality Certification for the project described in your application received January 24, 2012. Any changes in project design or scope not detailed in the application described above or modified by the conditions below are not authorized by this certification.

**CONDITIONS OF THE SECTION 401 WATER QUALITY CERTIFICATION:**

You shall:

- 1) Deposit any dredged material in a contained upland disposal area to prevent sediment runoff to any waterbody.
- 2) Install erosion control methods prior to any soil disturbance to prevent soil from leaving the construction site. Appropriate erosion control methods include, but are not limited to, straw bale barriers, silt fencing, erosion control blankets, phased construction sequencing, and earthen berms. Monitor and maintain erosion control structures and devices regularly, especially after rain events, until all soils disturbed by construction activities have been permanently stabilized.
- 3) Install silt fence or other erosion control measures around the perimeter of any wetlands and/or other waterbodies to remain undisturbed at the project site.
- 4) Allow the commissioner or an authorized representative of the commissioner (including an authorized contractor), upon the presentation of credentials:
  - a) to enter your property, including impact and mitigation site(s);
  - b) to have access to and copy at reasonable times any records that must be kept under the conditions of this certification;
  - c) to inspect, at reasonable times, any monitoring or operational equipment or method; collection, treatment, pollution management or discharge facility or device; practices required by this certification; and any mitigation wetland site;
  - d) to sample or monitor any discharge of pollutants or any mitigation site.
- 5) Complete all approved discharges no later than two (2) years of the date of issuance of this Section 401 Water Quality Certification. You may request a one (1) year extension to the Section 401 Water Quality Certification by submitting a written request ninety (90) days prior to the deadline stated above. The written request shall contain an account of which discharges and mitigation have been completed and list the reasons an extension is requested.

This certification does not relieve you of the responsibility of obtaining any other permits or authorizations that may be required for this project or related activities from IDEM or any other agency or person. You may wish to contact the Indiana Department of Natural Resources at 317-232-4160 (toll free at 877-928-3755) concerning the possible requirement of natural freshwater lake or floodway permits. In addition, you may wish to contact IDEM's Storm Water Permits Section at 317-233-1864 concerning the possible need for a 327 IAC 15-5 (Rule 5) permit if you plan to disturb greater than one (1) acre of soil during construction.

This certification does not:

- (1) authorize impacts or activities outside the scope of this certification;
- (2) authorize any injury to persons or private property or invasion of other private rights, or any infringement of federal, state or local laws or regulations;
- (3) convey any property rights of any sort, or any exclusive privileges;
- (4) preempt any duty to obtain federal, state or local permits or authorizations required by law for the execution of the project or related activities; or
- (5) authorize changes in the plan design detailed in the application.

Failure to comply with the terms and conditions of this Section 401 Water Quality Certification may result in enforcement action against you. If an enforcement action is pursued, you could be assessed up to \$25,000 per day in civil penalties. You may also be subject to criminal liability if it is determined that the Section 401 Water Quality Certification was violated willfully or negligently.

This certification is effective eighteen (18) days from the mailing of this notice unless a petition for review and a petition for stay of effectiveness are filed within this 18-day period. If a petition for review and a petition for stay of effectiveness are filed within this period, any part of the certification within the scope of the petition for stay is stayed for fifteen (15) days, unless or until an Environmental Law Judge further stays the certification in whole or in part.

This decision may be appealed in accordance with IC 4-21.5, the Administrative Orders and Procedures Act. The steps that must be followed to qualify for review are:

- 1) You must petition for review in writing that states facts demonstrating that you are either the person to whom this decision is directed, a person who is aggrieved or adversely affected by the decision, or a person entitled to review under any law.
- 2) You must file the petition for review with the Office of Environmental Adjudication (OEA) at the following address:

Office of Environmental Adjudication  
100 North Senate Avenue  
IGCN Room N501  
Indianapolis, IN 46204

- 3) You must file the petition within eighteen (18) days of the mailing date of this decision. If the eighteenth day falls on a Saturday, Sunday, legal holiday, or other day that the OEA offices are closed during regular business hours, you may file the petition the next day that the OEA offices are open during regular business hours. The petition is deemed filed on the earliest of the following dates: the date it is personally delivered to OEA; the date that the envelope

containing the petition is postmarked if it is mailed by United States mail; or, the date it is shown to have been deposited with a private carrier on the private carrier's receipt, if sent by private carrier.

Identifying the certification, decision, or other order for which you seek review by number, name of the applicant, location, or date of this notice will expedite review of the petition.

Note that if a petition for review is granted pursuant to IC 4-21.5-3-7, the petitioner will, and any other person may, obtain notice of any prehearing conferences, preliminary hearings, hearings, stays, and any orders disposing of the proceedings by requesting copies of such notices from OEA.

If you have procedural questions regarding filing a petition for review you may contact the Office of Environmental Adjudication at 317-232-8591.

If you have any questions about this certification, please contact Mr. Marty Maupin, Project Manager, of my staff by phone at 317-223-9880 or by e-mail at [mmaupin@idem.in.gov](mailto:mmaupin@idem.in.gov) or you may contact the Office of Water Quality through the IDEM Environmental Helpline (1-800-451-6027).

Sincerely,



Mary E. Hollingsworth, Branch Chief  
Surface Water, Operations & Enforcement Branch  
Office of Water Quality

cc: Paul Leffler, USACE- Chicago District  
Liz McCloskey, USFWS  
Lori White, Regional Env. Biologist, IDNR  
Randy Palchek, Parsons Corporation



**DEPARTMENT OF THE ARMY**  
CHICAGO DISTRICT, CORPS OF ENGINEERS  
111 NORTH CANAL STREET  
CHICAGO, ILLINOIS 60606-7206

REPLY TO  
ATTENTION OF:

March 28, 2012

Technical Services Division  
Regulatory Branch  
LRC-2012-11

SUBJECT: Nationwide Permit authorization for the removal of contaminated soils located at 5215 Kennedy Avenue in East Chicago, Lake County, Indiana

DuPont Corporate Remediation Group  
Attn: Mr. Sathya Yalvigi  
4417 Lancaster Pike CRP 715/218  
Wilmington, DE 19805

Dear Mr. Sathya Yalvigi:

This is in response to your permit application and plans for the above-referenced project. The U.S. Army Corps of Engineers has determined that your project is authorized by the existing Department of the Army Nationwide Permit number 38 (Cleanup of Hazardous and Toxic Waste) as published in the Federal Register on March 12, 2007. The subject activity may be performed without further authorization from this office provided that the activity complies with the Nationwide Permit terms and the special conditions listed below. The special conditions deemed necessary for this project are as follows:

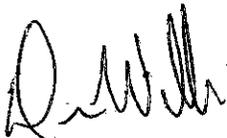
1. Installation of silt fence, or other appropriate soil erosion and sediment control measures (SESC), around excavation areas and the soil storage area. You must maintain these measures throughout the duration of construction to ensure they are effective in preventing sediment from escaping the area.
2. A temporary cover crop shall be planted on all slopes immediately upon completion of any earthwork to prevent soil erosion. An erosion control blanket may also be required depending on site conditions. Within three (3) months, at least 90% of this area, as measured by aerial coverage, will be vegetated. All cover crop species shall be non-persistent or native and not allelopathic.
3. Revegetate disturbed areas as outlined in your "Vegetation Restoration Plan" dated December 21, 2011, prepared by Parsons. Species selected for the planting shall be native to the area (ref. Swink and Wilhelm, Plants of the Chicago Region, 1994), and shall be appropriate for the hydrologic zone to be planted.
4. Manage the revegetated areas for three years to ensure the planted species are successful. Management will include supplemental seeding where necessary and removal or treatment of invasive species.

This determination covers only your project as described above and in the Grading Plans dated December 9, 2011, prepared by Parsons. Caution should be taken so that construction materials and/or activities do not enter any waterway or wetlands beyond the scope of this authorization. If the design, location, or purpose of the project is changed, you should contact this office to determine the need for further authorization.

This verification is valid for three years from the date of this letter. If it is anticipated that the activity as described cannot be completed within the time limits of this authorization, you must submit any request for a time extension to this office at least thirty (30) calendar days before the expiration date is reached. Failure to do so may result in the District's reevaluation of your project, which may include the issuance of a public notice. This determination is applicable only to the permit program administered by the U.S. Army Corps of Engineers. It does not eliminate the need to obtain all other required Federal, State or local approvals before beginning work.

For any additional information on the RGP, please access our website: [www.lrc.usace.army.mil/co-r](http://www.lrc.usace.army.mil/co-r). Once you have completed the authorized activity, please sign and return the enclosed compliance certification. If you have any questions, please contact Mr. Paul Leffler of my staff by telephone at 312-846-5529, or email at [paul.m.leffler@usace.army.mil](mailto:paul.m.leffler@usace.army.mil).

Sincerely,



Diedra L. Willis  
Indiana Team Leader  
Regulatory Branch

Enclosure

IDEM (Mr. Maupin)

USFWS (Ms. McCloskey)

The Nature Conservancy  
Attn: Mr. Paul Labus  
2400 New York Avenue  
Whiting, Indiana 46394

Randy Palachek  
Parsons Engineering Science, Inc.  
8000 Centre Park Drive  
Austin, Texas 78754

DuPont East Chicago, Natural Area  
Interim Remediation Measures (IRM)  
Excavation, Soil Stockpiling and Revegetation  
Storm Water Pollution Prevention Plan (SWPPP)

DuPont Representative: Sathya Yalvigi

[Sathya.V.Yalvigi@USA.dupont.com](mailto:Sathya.V.Yalvigi@USA.dupont.com)

Project Director

DuPont Corporate Remediation Group

974 Centre Road

CRP 715/218

Wilmington, DE 19805

Phone: 302-999-2764

Prepared by Parsons as Agent/Engineer for DuPont on this project.

Parsons Representative: Curt Burdorf

[Curt.Burdorf@Parsons.com](mailto:Curt.Burdorf@Parsons.com)

Parsons

8000 Centre Park Drive, Ste 200

Austin, TX 78754

512-656-9879

Submitted July 17, 2012.

***Table of Contents:******A1 - Plan Index showing locations of required items******A2 - 11 X 17 inch plat showing building lot numbers/boundaries and road layout/names******A3 - Narrative describing project nature and purpose:******A4 - Vicinity map showing project location:******A5 - Legal Description of the Project Site:******A6 - Location of all lots and proposed site improvements:******A7 - Hydrologic unit code:******A8 - Notation of any State or Federal water quality permits:******A9 - Specific points where Storm water discharge will leave the site:******A10 - Location and name of all wetlands, lakes, and water courses on and adjacent to the site:******A11 - Identify all Receiving Waters:******A12 - Identification of potential discharges to groundwater:******A13 - 100 Year Floodplains, floodways, and floodway fringes:******A14 - Pre-construction and post construction estimate of Peak Discharge:******A15 - Adjacent land use, including upstream watershed:******A16 - Locations and approximate boundaries of all disturbed areas:******A17 - Identification of existing vegetative cover:******A18 - Soils map including descriptions and limitations:******A19 - Locations, size and dimensions of proposed Storm water systems:******A20 - Plan for any off-site construction activities associated with this project:***

*A21 - Locations of proposed soil stockpiles, borrow and/or disposal areas:*

*A22 - Existing site topography at an interval appropriate to show detailed drainage patterns:*

*A23 - Proposed final topography at an interval appropriate to show detailed drainage patterns:*

**Assessment of Storm water Pollution Prevention – Construction Component (Section B):**

*B1 - Description of potential pollutant sources associated with the construction activities:*

*B2 - Sequence describing Storm water quality measure implementation relative to land disturbing activities:*

*B3 - Stable construction entrance locations and specifications:*

*B4 - Sediment control measures for sheet flow areas:*

*B5 - Sediment control measures for concentrated flow areas:*

*B6 - Storm sewer inlet protection measure locations and specifications:*

*B7 - Runoff control measures:*

*B8 - Storm water outlet protection specifications:*

*B9 - Grade Stabilization structure locations and specifications:*

*B10 - Location, dimensions, specifications and construction details of each Storm water quality measure:*

*B11 - Temporary surface stabilization methods appropriate for each season:*

*B12 - Permanent surface stabilization specifications:*

*B13 - Material handling and spill prevention plan:*

*B14 - Monitoring and maintenance guidelines for each proposed pollution prevention measure:*

*B15 - Erosion & Sediment control specifications for individual building lots:*

**Assessment of Storm Water Pollution Prevention – Post Construction Component (Section C):**

*C1 - Description of pollutants and their sources associated with the proposed land use.*

*C2 - Sequence describing storm water quality measure implementation.*

*C3 - Description of proposed post construction storm water quality measures.*

*C4 - Location, dimensions, specifications and construction details of each Storm water quality measure.*

*C5 - Description of maintenance guidelines for proposed post construction water quality measures.*

**Basic Plan Elements (Section A):*****A1 - Plan Index showing locations of required items***

The Table of Contents (Plan Index above) includes a list of the required items in the rule and where they occur in the plan.

***A2 - 11 X 17 inch plat showing building lot numbers/boundaries and road layout/names***

Figure 1 shows the Site Construction Layout. There is no development (residential or commercial) nor are there any structures or utilities on the eastern  $\frac{3}{4}$  of the property. Sections A3, A4, A5, A10 and A15 of this plan (below) describe the nature of the work tasks, the site and the general area. There are existing paved roadways on the western  $\frac{1}{2}$  of the property. The work area for this project is basically in the middle portion of the property.

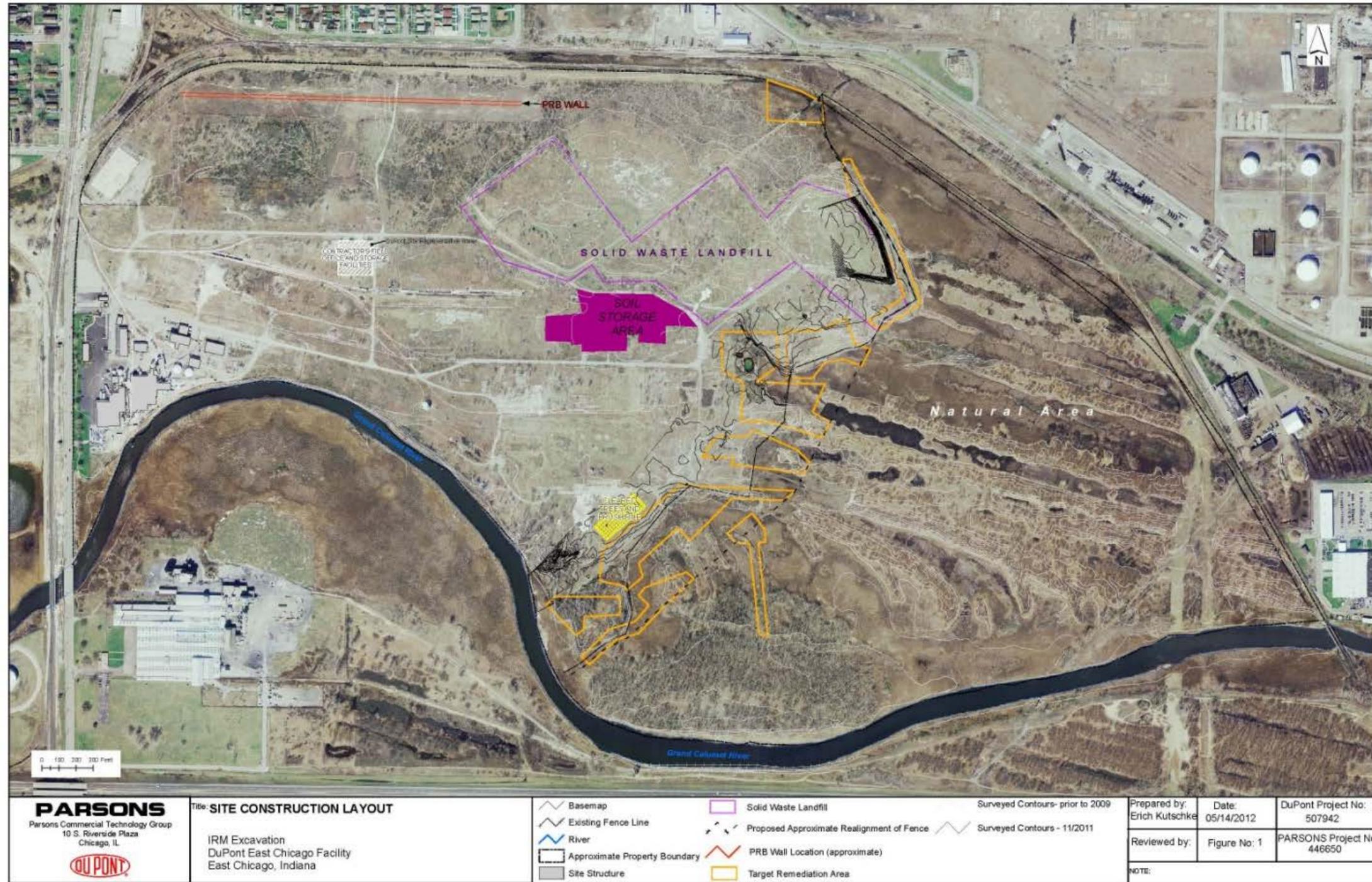
***A3 - Narrative describing project nature and purpose:***

This project involves implementation of interim remedial measures (IRM) for contaminated soils as part of the Resource Conservation and Recovery Act (RCRA) corrective action process. The surface area of potentially impacted soils covers approximately 21.4 acres of the Site. The project will involve the excavation of approximately 71,000 cubic yards of soil to allow environmental sampling and appropriate disposition or disposal of soil containing lead, arsenic, cadmium and zinc. This work will be completed under U.S. Army Corps of Engineers 401 and 404 permits, in coordination with The Nature Conservancy (TNC) and under DuPont's Resource Conservation and Recovery Act (RCRA) Order issued by the U.S. Environmental Protection Agency (EPA).

The excavated soil (two foot initial planned excavation depth) will be temporarily stockpiled onsite in an upland area with erosion control protection. The non-hazardous soil stockpiles will be revegetated with native seed as soon as practical. The potentially hazardous soil stockpiles will have a liner installed under each pile and will be covered with liner material and weighted down.

Finished grades will be approximately two feet lower than existing grades and will be contoured to follow natural grade and existing drainage patterns. In addition to reused soil, clean offsite backfill will be installed to fill to finished grade. The finalized non hazardous stockpile areas will be revegetated with a native seed mix and mulched per direction by TNC. The upland areas will be reseeded with native plant communities in coordination with TNC. TNC will also work to establish and manage any wetland areas with native vegetation in cooperation with DuPont.

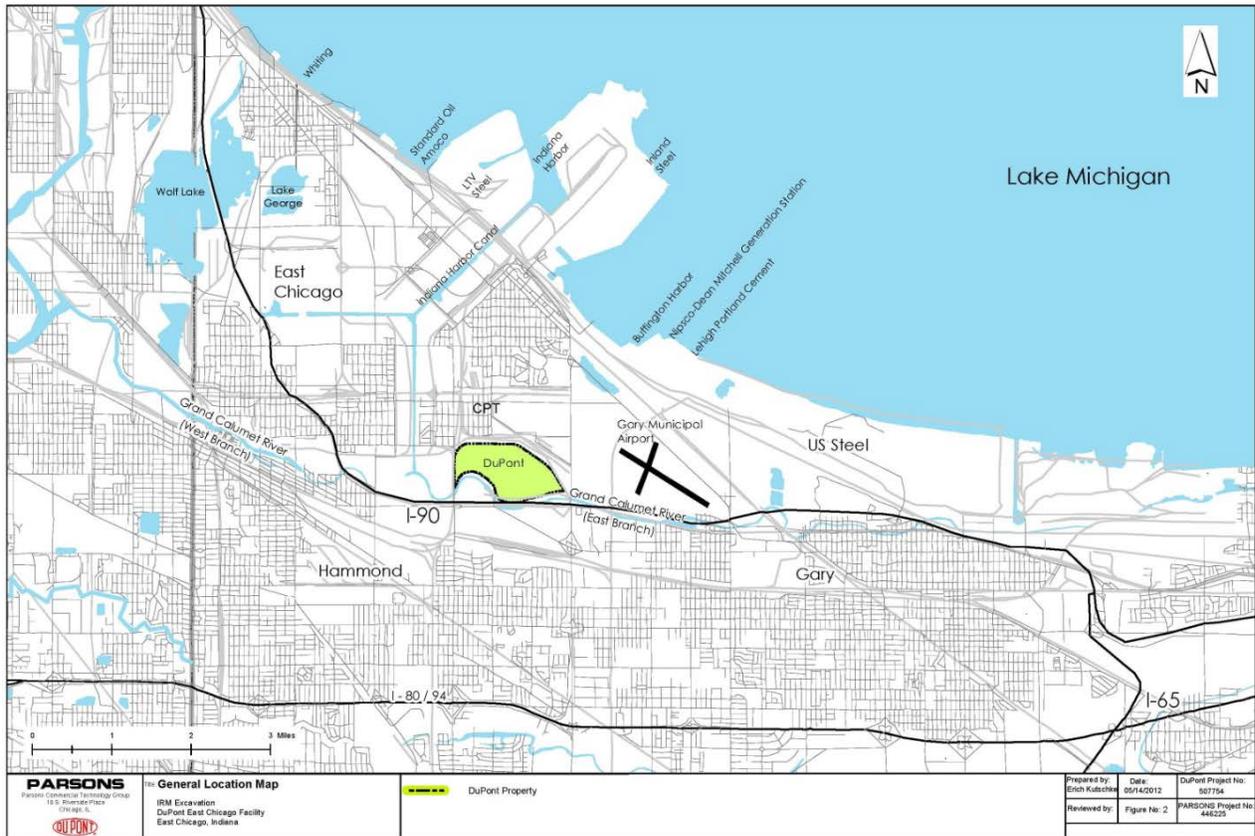
Figure 1 Site Construction Layout



**A4 - Vicinity map showing project location:**

Figure 2 is a map showing the DuPont East Chicago Facility Location.

**Figure 2 Vicinity Map**



**A5 - Legal Description of the Project Site:**

The DuPont East Chicago Site is located at 5215 Kennedy Avenue, East Chicago, Lake County, Indiana. The approximately 410-acre site is bounded to the south by the East Branch of the Grand Calumet River, to the east and north by residential and commercial areas, and to the west by industrial areas, including a former lead processing facility.

The DuPont Natural Area is associated with southern Lake Michigan and the Great Lakes watershed. The project area is located in Lake County, northwestern Indiana. The DuPont property is located along the north side of the Grand Calumet River, near the I-90 tollway and Gary Avenue. A majority of the Grand Calumet River flow drains into Lake Michigan via the Indiana Harbor and Ship Canal.

The southern part of this western developed area was used mainly for manufacturing purposes, while the northwest and eastern sections were used as waste management areas. Currently, most of the previously active manufacturing areas have been decommissioned and the production facilities have been removed, with the exception of approximately 30 acres in the southwest corner of the site where industrial facilities continue to operate under separate ownership. The eastern portion of the East Chicago Site, approximately 163 acres, was not developed and retained its original plains/dunes geomorphology and associated plant communities. Commonly referred to as the Natural Area, this section of the East Chicago Site is currently managed by The Nature Conservancy for habitat preservation.

Lat/Long at a location near the center of the construction area: 41° 37' 01.29" N, 87° 26' 44.91" W

***A6 - Location of all lots and proposed site improvements:***

Not applicable, all property is and shall remain a single entity owned by DuPont.

***A7 - Hydrologic unit code:***

HUC 04040001020020

***A8 - Notation of any State or Federal water quality permits:***

401 Permit: IDEM No: 2012-013-45-MTM-A (dated April 11, 2012)

404 Permit: Corps of Engineers, Technical Services Division, Regulatory Branch authorized the project under Department of the Army Nationwide Permit Number 38 (Letter dated March 28, 2012).

***A9 - Specific points where Storm water discharge will leave the site:***

Drainage from the entire construction site flows overland (on site) then directly into the East Branch of the Grand Calumet River which is the southern border of the property.

***A10 - Location and name of all wetlands, lakes, and water courses on and adjacent to the site:***

The East Branch of the Grand Calumet River is the southern border of the property.

The Natural Area is a remnant of the dune and swale system that characterized the Toleston Strandplain which developed when the waters of Lake Michigan gradually receded over the past

2,500 years. Initially this beach formation and associated natural communities covered about 70 square miles, but currently occupies approximately 1,400 acres of fragmented remnants.

The dune and swale topography is characterized by low linear beach ridges and intervening swales that run parallel to the shoreline of Lake Michigan. The dune ridge tops support black oak savanna and xeric sand prairie, and the slopes support mesic prairie. The swales support a variety of wetland communities, including wet prairie, sedge meadow, emergent marsh, and open water. This mosaic of natural communities is considered globally rare and endemic to the Great Lakes Region (USACE 2010).

Dune and swale systems and their associated natural communities are unique to the Great lakes and considered globally rare (USACE 2010). The DuPont Natural Area is one of the few undisturbed tracts of the dune and swale system which has survived development along the southern shore of Lake Michigan.

The Indiana Department of Natural Resources (IDNR) Division of Nature Preserves holds a conservation easement on 172 acres of the DuPont Natural Area. The Natural Area was conveyed to IDNR as part of the settlement of natural resource damage claims with the Natural Resource Trustees of Indiana for the Grand Calumet River.

The Nature Conservancy (TNC) has managed this tract since 1999, focusing on restoring the structural, compositional, and functional components of the dune and swale complex thru the natural plant communities and will continue to do so under a management agreement with the IDNR (TNC 2006).

A wetlands delineation and waters of the United States (U.S.) survey was conducted in 2011 at the DuPont East Chicago Site where industrial manufacturing and waste disposal activities were formerly conducted. The DuPont East Chicago Site is located at 5215 Kennedy Avenue, East Chicago, Lake County, Indiana within the southern Lake Michigan and the Great Lakes watershed. The survey covered approximately 21 acres of the Site that have been targeted for implementation of interim remedial measures (IRM) of contaminated soils as part of the Resource Conservation and Recovery Act (RCRA) corrective action process.

Parsons scientists conducted the wetlands and vegetation survey in September 2011. Wetlands delineation was conducted in accordance with the *U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual* (USACE 1987) and the *Interim Regional Supplement for the Northcentral and Northeast Region* (USACE 2008). Clean Water Act (CWA) jurisdiction was applied over certain wetlands within the Project Area in accordance with *Joint EPA and USACE Guidance: Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States and Carabell v. United States* (EPA and USACE 2007).

The survey identified 7.4 acres of wetlands located within or adjacent to the target remediation areas. A pre-determination of CWA jurisdiction is proposed in this report for all surveyed wetlands. These jurisdictional waters are associated with the floodplain of the Grand Calumet River.

The NWI coverage for Lake County, Indiana is extensive. The National Wetlands Inventory (NWI) mapped wetlands in the area include palustrine emergent marsh, *Phragmites* dominant, semi-permanently flooded (PEM5EF), palustrine emergent marsh, *Phragmites* dominant, semi-permanently flooded, excavated (PFM5EFx), and palustrine, forested, broad-leafed deciduous, seasonally flooded, spoils (PFO1Cs). Wetlands identified within the excavation areas of the site are shown in Figure 3.

#### ***A11 - Identify all Receiving Waters:***

Drainage from the entire construction site flows overland (on site) then ultimately into the East Branch of the Grand Calumet River which is the southern border of the property.

#### ***A12 - Identification of potential discharges to groundwater:***

There are no sinkholes or uncapped abandoned wells in the construction zone or downstream of the construction zone. Discharge to groundwater would be through natural ground absorption only.

#### ***A13 - 100 Year Floodplains, floodways, and floodway fringes:***

The project site is adjacent to the East Branch of the Grand Calumet River. The site contains both upland areas and wetland areas. See Section A10 for more information on the wetlands on site. The most recent FEMA / FIRM map for the site is located at:

<http://www.in.gov/dnr/water/files/18089C0127E.pdf>

Project activities are not within the floodway for Grand Calumet River. Some of the activities are in the floodplain, hence the 401 and 404 Permits were issued as discussed above.

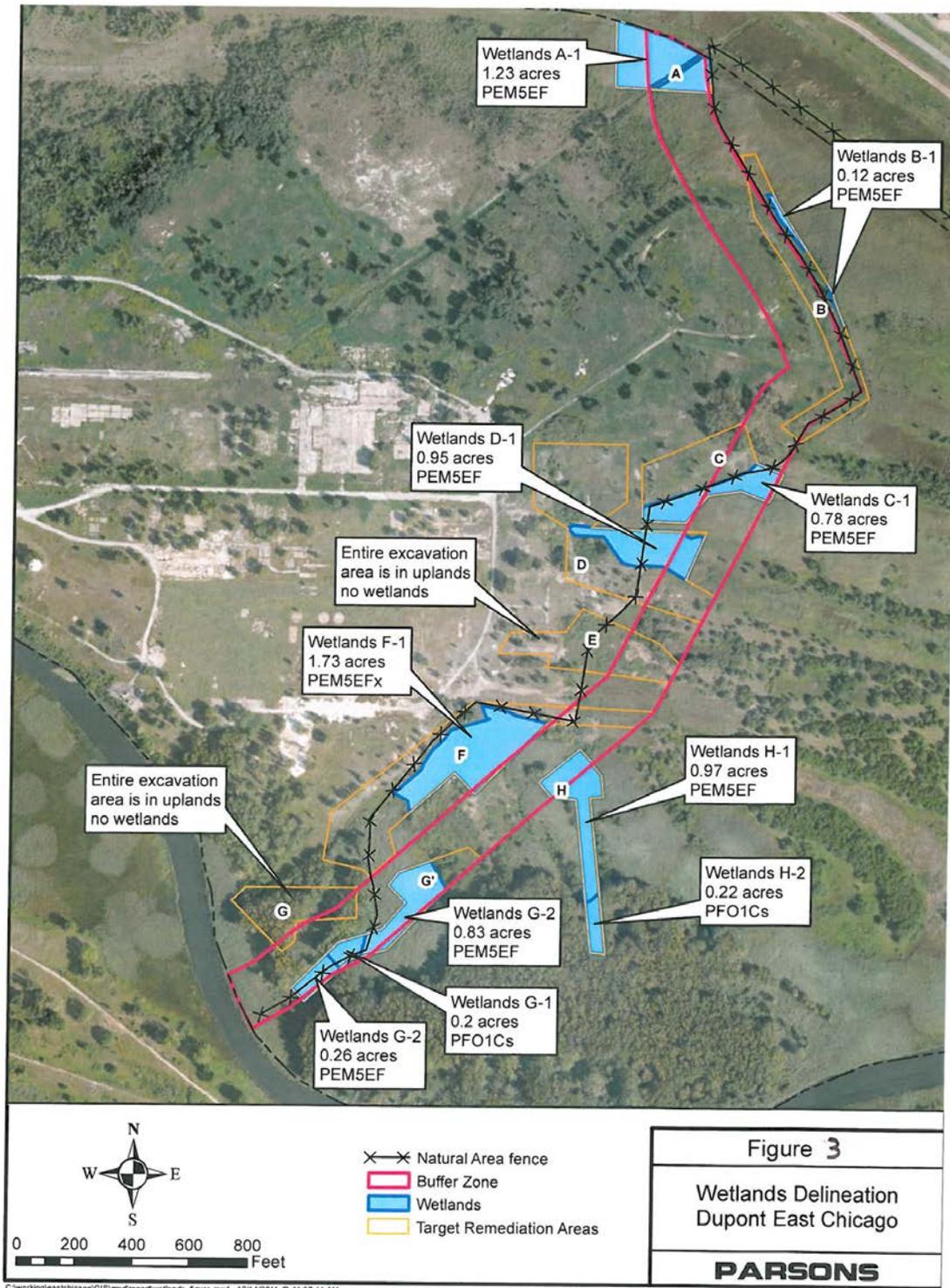
#### ***A14 - Pre-construction and post construction estimate of Peak Discharge:***

Downstream of the construction area there is a wetland area before affected runoff would enter the East Branch of the Grand Calumet River. Before and during construction activities, runoff flow into excavation areas or stockpile areas shall be limited by erosion control structures installed immediately upstream and downstream of these areas. The project has relatively small areas of disturbance compared to the size of the site and wetlands surrounding and downstream of the construction areas. With the exception of using a plastic liner to cover approximately 1,000 cubic yards of potentially hazardous soil that will be stockpiled in an upland area, there will be no change in impervious cover for this project at the approximately 410-acre site. The construction work should not significantly modify peak discharge flow or peak discharge timing from the site.

Post construction runoff quantities and timing will be the same as existing conditions after revegetation is completed and erosion control measures are removed.

Peak discharge calculations were not calculated based on the above reasons, as no changes in impervious cover, drainage or slopes are anticipated.

**Figure 3 Wetlands Map**



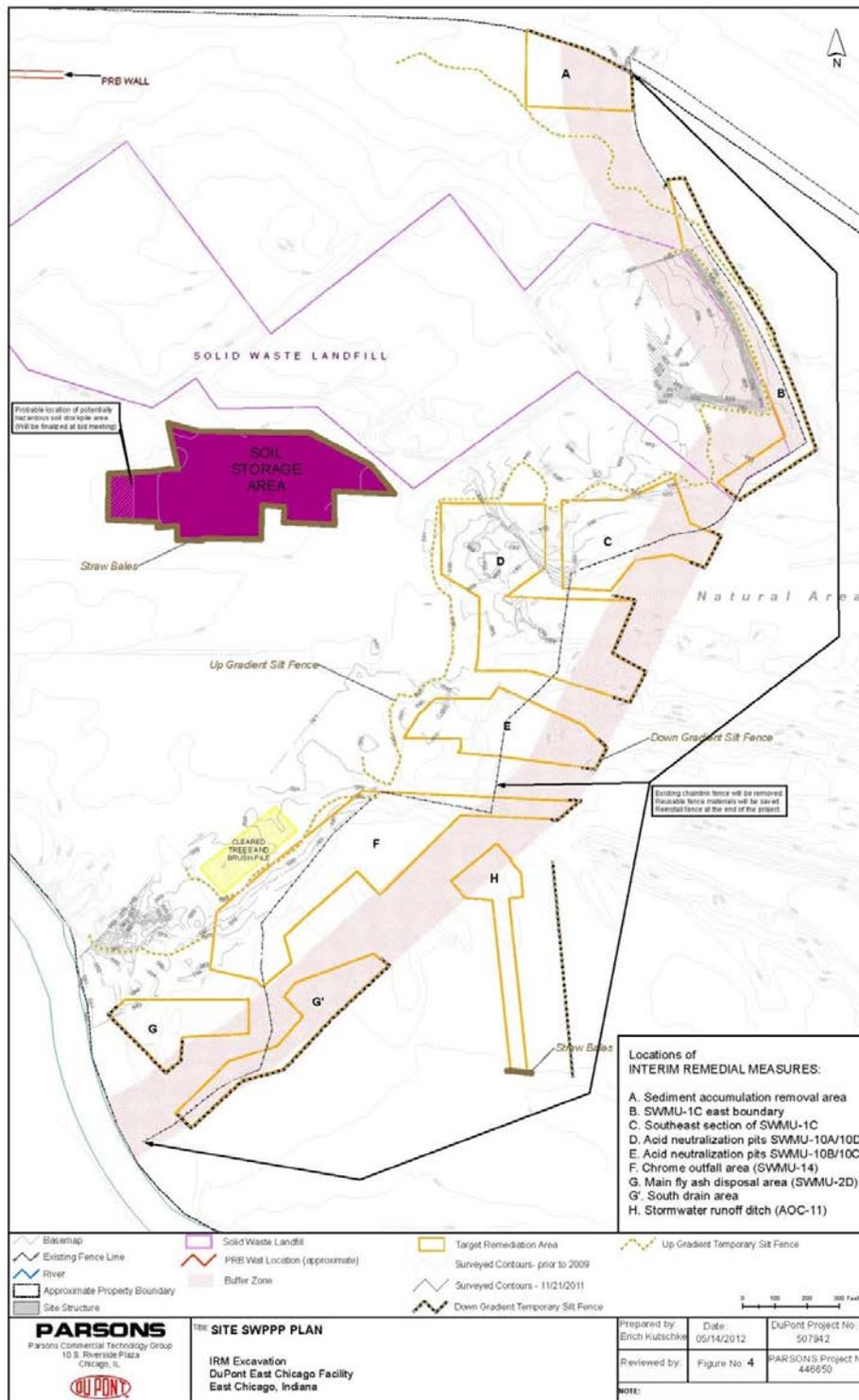
***A15 - Adjacent land use, including upstream watershed:***

The DuPont East Chicago Site is bounded to the south by the East Branch of the Grand Calumet River, to the east and north by residential and commercial areas, and to the west by industrial areas. In 2009, DuPont donated a conservation easement on 172 acres of the Natural Area to Indiana Department of Natural Resources (IDNR) as part of a Natural Resource Damage settlement. As a result, DuPont, IDNR, and The Nature Conservancy (TNC) have formed a partnership to protect, restore, and manage this exceptional example of regional biodiversity.

***A16 - Locations and approximate boundaries of all disturbed areas:***

The excavation areas and stockpile areas are shown on Figure 4.

**Figure 4 Site Excavation Plan**



### ***A17 - Identification of existing vegetative cover:***

The Nature Conservancy (TNC) has managed this tract since 1999, focusing on documenting and restoring the structural, compositional, and functional components of the dune and swale complex through the natural plant communities and will continue to do so under a management agreement with the IDNR (TNC 2006. West Gary Recovery Unit Safe Harbor Agreement. Prepared by The Nature Conservancy).

The DuPont East Chicago site lies within the Calumet Lacustrine Plain, or lake plain. As the glacial ice retreated about 12,000 to 18,000 years ago, fluctuating lake levels in combination with wind and wave action contributed to the formation of the physiography of the Lake Michigan coastal area. As a result, three archaic beaches were formed, the Glenwood, Calumet, and Toleston, which remain above current Lake Michigan water levels. Between the archaic beach formations, ridges were built by wave activity, erosion, and wind-blown deposits. Coastal marshes and wetlands formed between the ridges at the southern end of Lake Michigan, providing habitat for shore birds, waterfowl, fishes, mammals, amphibians, reptiles, invertebrates, and plants (Watson et al. 1999).

Part of the Buffer Zone and the adjacent DuPont Natural Area are considered remnant ridge and swale complex within the region. The ridge and swale complex is composed of parallel wetland swales and upland beach ridges found in coastal embayments and on large sand spits along the shorelines of the Great Lakes. Distinct areas of successional vegetative zones or communities determined by factors such as distance from the lake, amount of soil development, groundwater input, and light availability occupy the ridge and swale formations. The primary communities typically proceed from open ridges and interdunal wetlands along the lake shore to grassland, followed by shrubland, and finally forested ridges and swales are found further inland (USACE 2010).

Some areas within the project area have been heavily invaded by *Phragmites*, while other portions of the area remain as low or high quality habitat, depending on restoration activities by TNC. Figure 5 depicts vegetation community distribution types within the IRM project area. High quality habitats are shown on Figure 5. Tables 1 and 2 list the vegetation community types found within the Buffer Zone and the target remediation areas, respectively.

**Table 1 Vegetation Community Types and Coverage within the Buffer Zone**

<b>Vegetation Community Type</b>	<b>Description</b>	<b>Area (acres)</b>
Marsh-Wet Meadow	<i>Phragmites</i> dominant marsh areas in interior of swales	3.71
Oak Barrens	Oak dominant savanna on uplands	2.55

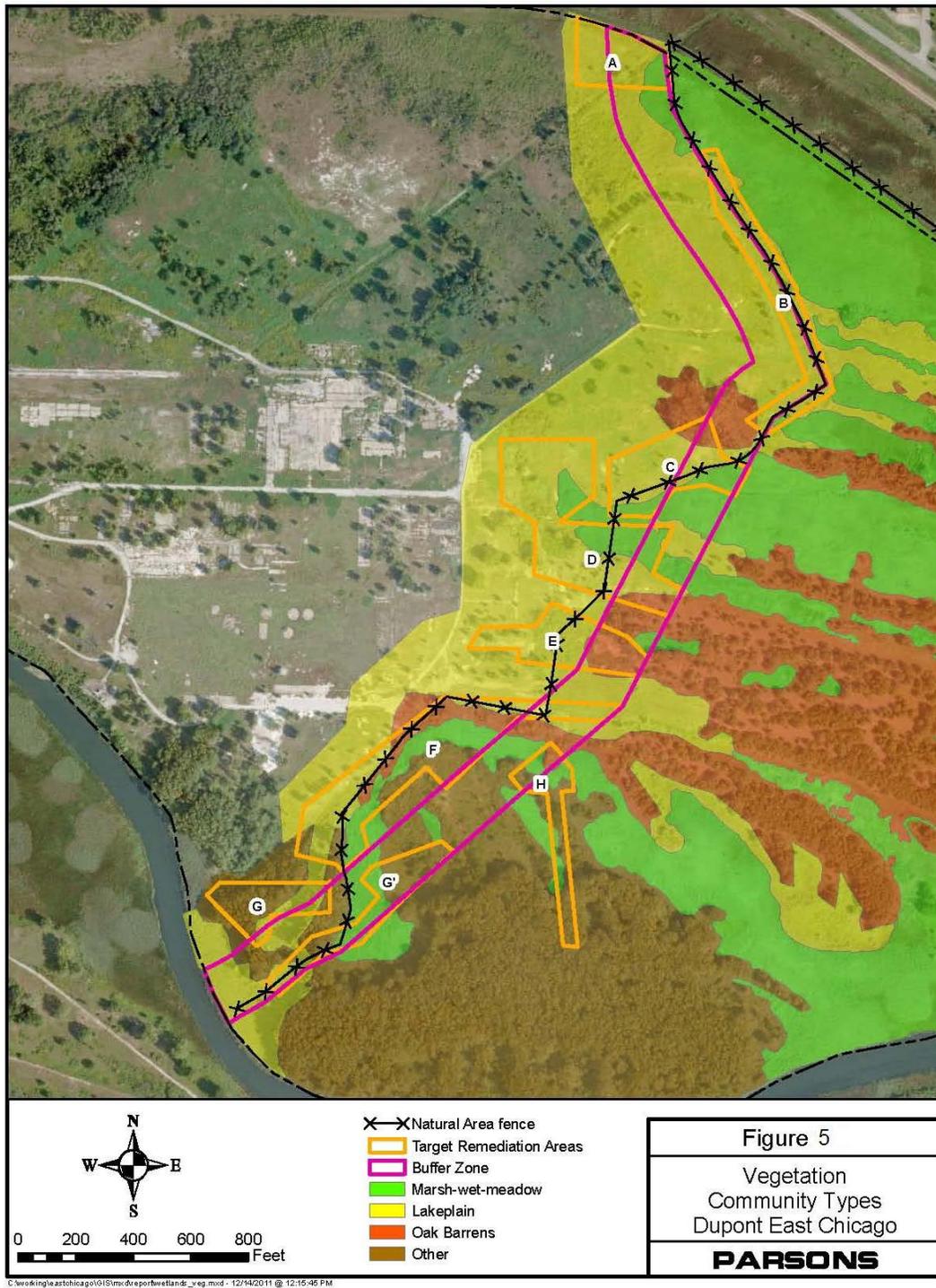
<b>Vegetation Community Type</b>	<b>Description</b>	<b>Area (acres)</b>
Lakeplain	Mesic prairie persisting on perimeter of <i>Phragmites</i> -dominant swales.	10.0
Other	Previously developed or disturbed areas	3.56
	Total	19.9

**Table 2      Vegetation Community Types and Coverage within Target Remediation Areas**

<b>Target Remediation Area</b>	<b>Vegetation Community Type</b>	<b>Area (acres)</b>
A	Marsh-wet-meadow	0.23
	Lakeplain	1.14
B	Marsh-wet-meadow	0.09
	Oak Barrens	0.02
	Lakeplain	2.12
C	Marsh-wet-meadow	0.56
	Oak Barrens	0.21
	Lakeplain	1.42
D	Marsh-wet-meadow	0.99
	Lakeplain	3.30
	Oak Barrens	0.24
E	Oak Barrens	0.59
	Lakeplain	1.24
	Marsh-wet-meadow	0.01

<b>Target Remediation Area</b>	<b>Vegetation Community Type</b>	<b>Area (acres)</b>
F	Marsh-wet-meadow	1.05
	Oak Barrens	0.81
	Other	0.95
	Lakeplain	1.58
G	Other	0.87
	Lakeplain	0.39
G'	Marsh-wet-meadow	0.48
	Other	0.82
	Lakeplain	0.26
H	Marsh-wet-meadow	0.34
	Oak Barrens	0.10
	Other	0.75
	Total	20.6

**Figure 5 Vegetation Community and Locations**



***A18 - Soils map including descriptions and limitations:***

The Grand Calumet River watershed can be divided into two primary natural or soil regions. The Calumet Lacustrine Plain covers the northern section and a portion of the Valparaiso Moraine the southern section. Sands are very permeable and thus precipitation passes through the soils quickly to the groundwater below without much attenuation by microorganisms or physical or chemical processes. Clays and fine silts, on the other hand, would swell up when wet to prevent the passage of water. Both very permeable and relatively impermeable soils can often both be found in the same complex moraine area (USACE 2010).

DuPont East Chicago Site is located within the Calumet Lacustrine Plain. Dominant soils in this area include the Oakville and Adrian complex. Oakville soils are well drained and are characteristic of ridge formations. Adrian soils, characterized by the swale landform, are typically found in depressions on outwash plains, till plains, and lake plains. Adrian soils are composed of herbaceous organic material over sandy outwash resulting in soils that are very poorly drained and in turn have a high water capacity. Houghton muck, composed of herbaceous organic material, is the third dominant soil type present at DuPont. Houghton soils are characterized as very poorly drained and are found in depressions on outwash plains, till plains, lake plains, and moraines. Figure 6 depicts soils distribution in the project area.

Soils within the Buffer Zone and adjacent target remediation areas are detailed below based on Natural Resource Conservation Service (NRCS) Official Soil Descriptions (USDA-NRCS 2009). Tables 3 and 4 list soil types within the Buffer Zone and target remediation areas, respectively.

**Table 3 Soil Types and Coverage within the Buffer Zone**

<b>Map Symbol</b>	<b>Soil Description</b>	<b>Area (acres)</b>
Ur	Urban land	9.26
Ta	Adrian muck, drained, 0 to 1 percent slopes	3.16
OkB	Oakville-Adrian complex, 0 to 6 percent slopes	5.51
Ca	Houghton muck, drained, 0 to 1 percent slopes	1.91
	Total	19.8

**Table 4 Soil Types and Coverage within Target Remediation Areas**

<b>Target Remediation Area</b>	<b>Soil Description</b>	<b>Area (acres)</b>
A	Urban land	0.08
	Adrian muck, drained, 0 to 1 percent slopes	1.28
B	Urban land	0.26
	Adrian muck, drained, 0 to 1 percent slopes	1.88
	Oakville-Adrian complex, 0 to 6 percent slopes	0.08
C	Urban land	1.96
	Oakville-Adrian complex, 0 to 6 percent slopes	0.22
D	Urban land	4.21
	Oakville-Adrian complex, 0 to 6 percent slopes	0.32
E	Urban land	1.82
	Oakville-Adrian complex, 0 to 6 percent slopes	0.02
F	Urban land	3.76
	Oakville-Adrian complex, 0 to 6 percent slopes	0.63
G	Oakville-Adrian complex, 0 to 6 percent slopes	1.26

<b>Target Remediation Area</b>	<b>Soil Description</b>	<b>Area (acres)</b>
G'	Oakville-Adrian complex, 0 to 6 percent slopes	0.68
	Houghton muck, drained, 0 to 1 percent slopes	0.89
H	Urban land	0.10
	Oakville-Adrian complex, 0 to 6 percent slopes	0.90
	Houghton muck, drained, 0 to 1 percent slopes	0.19
	Total	20.6

**Figure 6 Soil Map**



**Adrian**

Adrian soils formed in herbaceous organic material over sandy deposits and occupy shallow closed depressions primarily on outwash plains, lake plains, lake terraces, and flood plains, but can occur within moraines and till plains. Areas range from a few acres to several hundred acres in size. Slope gradients range from 0 to 1 percent. Adjacent upland soils are usually sandy. This soil is very poorly drained and the potential for surface runoff is negligible. Permeability is moderately slow to moderately rapid in the organic material and rapid in the sandy material. The depth to the top of an apparent seasonal high water table ranges from 1-foot above the surface to 1-foot below the surface from September to June in normal years. In the flooded phase, areas are subject to frequent flooding for long periods between October and June. This soil is classified as hydric.

**Houghton**

Houghton soils occupy closed depressions within lake plains, outwash plains, ground and end moraines, and on floodplains. Slope gradients are less than 2 percent. This soil is very poorly drained and depth to the seasonal high water table ranges from 2-feet above the surface in ponded phases to 1-foot below the surface from September to June. The potential for surface runoff is very slow or ponded. Permeability is moderately slow to moderately rapid. This soil is classified as hydric.

**Oakville**

Oakville soils are characteristic of ridge formations and are born of Eolian sands. Slope gradients are less than 6 percent. This soil is well drained and depth to the seasonal high water table may be greater than 80 inches. The potential for surface runoff is extremely high. Permeability is high to very high.

**Urban**

This soil is composed of man-made fill. The permeability of the soil varies depending on the materials used for the fill.

There are no limitations for this project due to the soil types present, as no utilities, structures or septic systems will be installed for the project.

***A19 - Locations, size and dimensions of proposed Storm water systems:***

After excavation is complete, minor grading and revegetation will be performed and natural succession will be allowed to restore the area. The final grade and overland drainage will be very similar to the existing grade and drainage patterns, except it will be approximately two feet lower than existing grade. TNC preferred this option versus bringing in outside fill and potentially invasive vegetation species.

***A20 - Plan for any off-site construction activities associated with this project:***

None.

***A21 - Locations of proposed soil stockpiles, borrow and/or disposal areas:***

Locations of soil stockpiles are shown on Figures 1 and 4. Clean backfill will be transported from an offsite source only as necessary and it will be analyzed to verify that the soil meets criteria for the soil to be used for backfill.

Soil will be stockpiled onsite in the designated stockpile area.

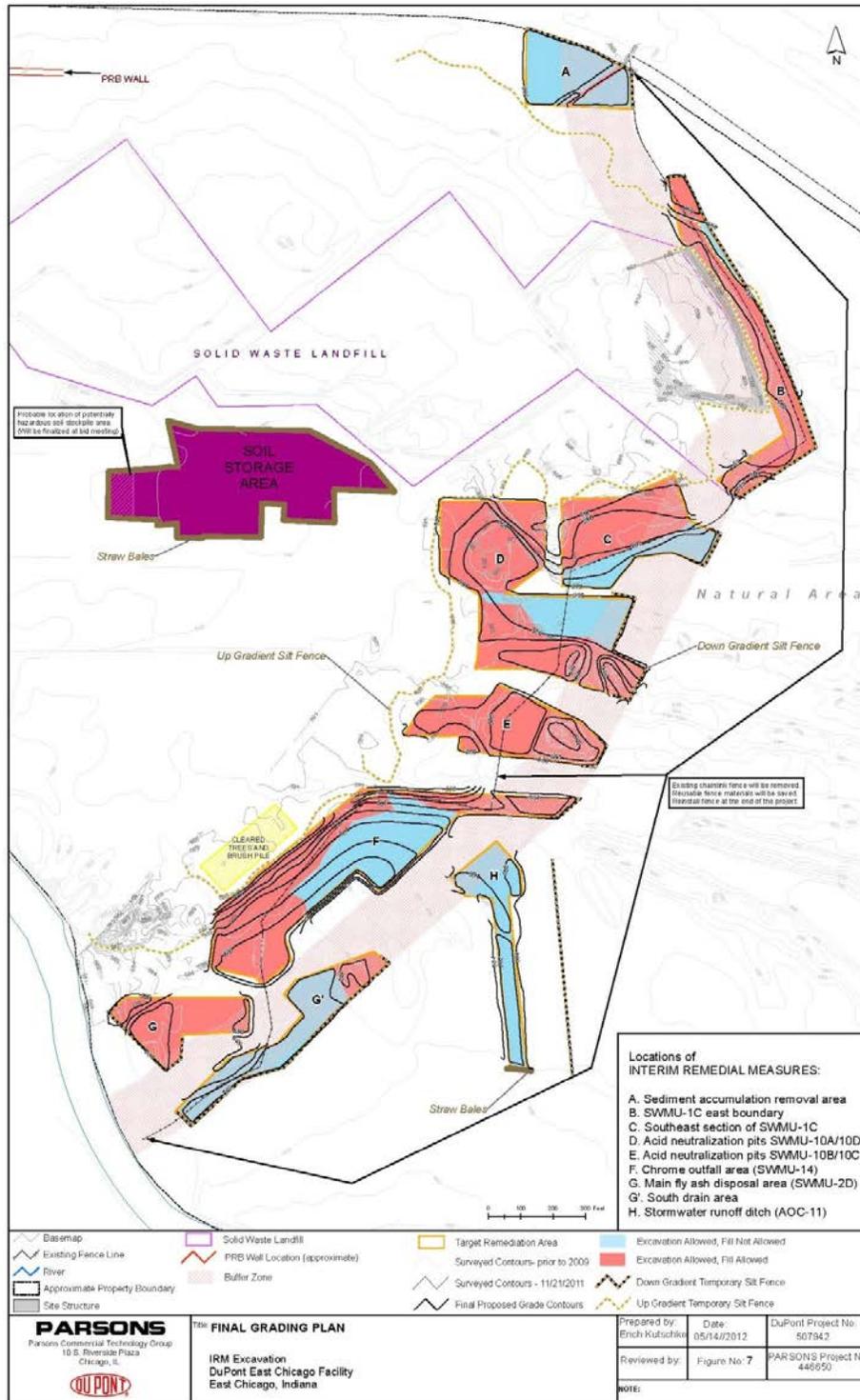
***A22 - Existing site topography at an interval appropriate to show detailed drainage patterns:***

Existing site topography is provided on Figure 4.

***A23 - Proposed final topography at an interval appropriate to show detailed drainage patterns:***

Finished grades will be very similar to existing grade except for two feet less in the excavation areas. Natural drainage patterns will be maintained. Figure 7 shows the finished grades.

**Figure 7 Finished Grades**



## Assessment of Storm Water Pollution Prevention – Construction Component (Section B)

### *B1 - Description of potential pollutant sources associated with the construction activities:*

Potential pollutant sources from project construction tasks include material and fuel storage areas, fueling locations, exposed soils, equipment maintenance fluids, leaking vehicles and equipment.

The contractor will install silt fences and straw bales to contain potential erosion. This is detailed in the following sections and on figures included in this document. Site activities will be planned and performed in a manner to keep from releasing or spilling fuels, hydraulic fluids and greases for equipment, decontamination wastes and general rubbish. Due to excavation and soil transport being the sole focus of this project, it will not include the use of most common construction materials.

Most activities and storage of materials or substances that could cause a hazard if spilled will be performed in the construction lay-down area. Whenever possible, equipment will be fueled and repairs made on the paved surface of the construction lay-down area.

In the event of a spill of fuel, hydraulic fluids or grease, spill response will entail the following:

- immediately stopping the source of the spill,
- setting up a containment barrier around the spill,
- prompt collection and cleanup of the spilled substance,
- prompt cleanup of the area effected,
- notify the East Chicago Fire Department immediately at 911, if necessary,
- notify the Federal Emergency Spill Hotline at 1-800-424-8802 within two hours if the amount is above reportable quantity or any amount enters a waterway,
- notify the Indiana Emergency Response Hotline at 1-888-233-7745, and
- perform appropriate disposal of spill cleanup material and waste.

In addition, the project specifications and bid package require the following of the contractor:

The following text is copied from the project specifications (dated 6-14-2012) Section 01080, Part 1.08, SPILL CONTROL:

The Contractor shall be responsible for Spill and Emission Control in accordance with the requirements of 40 CFR 112, the Project SWPPP, the Project 401 and 404 permits and local regulations. Spill and emission control shall be addressed in the Contractors Health and Safety Plan Addendum.

The Contractor shall immediately notify the DuPont Site Representative (DSR) in the event of a spill or release, regardless of the spill location or size/quantity.

The Contractor shall provide methods, means, and facilities required to prevent contamination of land, air, water, uncontaminated structures, equipment, or material by the discharge of wastes or residues due to Contractor's operations.

The Contractor shall provide material, equipment, and personnel to perform emergency measures required to contain any spillage and to manage spilled materials and soils or liquids that become contaminated due to spillage. The Contractor shall provide, at a minimum, the spill control and cleanup equipment and materials such as standard synthetic sorbent materials, mineral sorbents, drums, portable pumps complete with hoses, vapor resistant sheeting and tarps, shovels and rakes. All equipment and labor for spill cleanup shall be properly disposed of.

The Contractor shall provide equipment and personnel required to perform routine decontamination of site equipment as well as measures that may be required to remove spillage from previously uncontaminated structures, equipment, material, or soil. Decontamination residues resulting from spills shall be properly treated and / or disposed of.

The Contractor shall provide equipment and personnel to mitigate any spillage of material that might occur during transport of any materials offsite.

If a spill or discharge occurs outside the Exclusion Zone, the Contractor shall immediately notify the DuPont Site Representative and implement the Contractor's spill and emission control measures detailed in their Health and Safety Plan Addendum.

### ***B2 - Sequence describing Storm water quality measure implementation relative to land disturbing activities:***

The following text is copied from the project specifications (dated 6-14-2012), Section 01010, Part B., Site Work:

Prior to the start of construction, a preconstruction inspection will be performed and preconstruction photographs to document the condition of the work areas, facilities, and site roads will be taken.

Contractor's key personnel shall attend a Project Safety Analysis (PSA) meeting. This meeting may take up to 3-hours.

Contractor will obtain daily work permit authorizations from the DSR. In areas adjacent to or within the Natural Area, all work will also be closely coordinated with The Nature Conservancy (TNC) representatives to minimize any impacts to the site.

Contractor Plans as detailed in Section 1.01 A. 3. will be prepared and submitted to the DuPont Site Representative (DSR) and the Engineer for review prior to the start of Construction Activities.

Contractor shall plan and perform all work in a manner to meet the requirements listed in the Section 401 Water Quality Certification Permit (dated 4/11/2012) and the 404 Nationwide Permit (dated 3/28/2012) for this Project. These two permits are provided at the end of these Specifications.

Contractor shall plan and perform all work in a manner compliant with the Project Storm Water Pollution Prevention Plan (SWPPP).

Mobilization of temporary construction facilities and installation of temporary utilities.

Conduct all baseline pre-construction surveys, install all survey control, conduct all intermediate surveys and final record surveys required to construct the work in accordance with the contract documents.

Mobilization of the construction equipment and personnel.

The existing chain link fence identified on Figure 4 will be removed. This removal shall be performed in a manner to salvage and store all reusable materials (at a minimum the fence mesh). This material will be reused when the Contractor reinstalls the fence after completion of project activities. Temporary haul roads will be installed, as deemed necessary by the Contractor to facilitate the excavation and transport of soil and materials necessary for the project.

Erosion protection engineering controls will be installed to protect the Natural Area, stockpile areas and excavation areas. This will be an ongoing process during construction and long term erosion protection will be left in place upgradient of the excavation areas. During construction activities, silt fence and/or strawbales (as indicated in figures) will be placed both upgradient and downgradient of the excavation area to aid in prevention of soil eroding out of the excavation area and into the Natural Area.

Clearing of the work areas will begin. This will be an ongoing operation during the performance of the construction. The vegetation is mostly brush, grass and phragmites with a few trees. Caution shall be used in clearing, grubbing, excavation and grading activities as some areas of the work site may have metal or other debris in the ground which shall be safely handled by the contractor. The phragmites in excavation areas can be cut and laid down to aid in providing a working surface for excavation in the wetland areas and can be excavated with the soil. The remaining cleared vegetation from the non-hazardous soil storage areas shall be removed and placed on-site in areas outside of the excavation areas. All vegetation removed from the potentially hazardous soil areas shall be placed on the appropriate soil storage pile for these materials. All vegetation from these areas removed as part of the clearing work shall be chipped or shredded prior to placing the material on the soil storage pile. All tree stumps removed from the excavation areas are to be shredded and or chipped prior to being placed in the appropriate soil stockpile area with the soil.

Soil samples shall be collected from the Contractor's proposed offsite borrow areas (general fill) for submittal for QA testing and the results submitted to the DuPont Site Representative (DSR) for approval if needed.

The Soil Storage area for the non-hazardous soils, shown on the drawings, will be prepared by clearing any vegetation which will interfere with the placement of the excavated soil. The perimeter of the paved area for stockpiles shall have straw bales placed around it to provide erosion protection. The exclusion zone fence shall be placed around the Soil Storage Area. The exclusion zone fencing will consist of four-foot high orange safety fencing supported by steel drive posts. The straw bales must be maintained during the site work and the straw bales replaced as necessary. The straw bales and exclusion zone fencing shall be left in place at the end of the Project.

In addition to the storage area for the non-hazardous soils, another separate soil storage area will be prepared for storage of soils excavated from the areas designated for excavation of potentially hazardous soils.

All potentially hazardous soils placed on this storage area must have a liner placed underneath them and be kept covered with plastic sheeting material suitable to last at least one year in the elements (40 mil Low Density Polyethylene (LDPE), or better, as shown in test results for puncture resistance and longevity to environmental conditions) to prevent migration of the potentially contaminated soils from the pile.

The liner over the potentially hazardous soil must be secured (weighted down, etc.) as necessary to prevent water intrusion and prevent the liner from being dislodged by the wind. The potentially hazardous soil storage area must also have straw bales and safety fencing placed around the area. It is the responsibility of the Contractors to, based on estimated soil quantities provided below, determine the specific location and size for the pad within the upland area of the site, size the soil pile pad and construct a storage pile pad adequate for the amount of potentially hazardous soils. The proposed location, size and details of construction for this additional storage pad for the potentially hazardous soils must be shown in the Contractor's Plan of Project Tasks submitted with the Bid.

The Contractor shall excavate and stockpile the potentially hazardous soil before beginning work on non-hazardous soil excavation. It is anticipated that there will be less than or equal to approximately 1,000 cubic yards (in bank) of potentially hazardous soils.

Non-hazardous soils will be excavated to a depth of two feet at the "Target Remediation Area" boundaries shown on Figures 3 and 4. It is estimated that there will be less than or equal to approximately 70,000 cubic yards (in bank) of non-hazardous soil.

The non-hazardous soil piles shall be graded, consolidated, and maintained in order to minimize erosion and provide a stable soil pile. This non-hazardous soil will not have a liner placed under it, nor will it be covered with liner material. After all of the non-hazardous soil has been placed, graded, and consolidated; seed and mulch will be applied to the pile with the specified temporary seed mix.

The Contractor shall containerize all disposable decontamination equipment and personnel protection equipment in appropriate containers provided by DuPont. DuPont will dispose of all decontamination water and PPE.

DuPont will provide a Frac tank to store decontamination water. The Contractor shall separate any solids (sediment, etc.) from decontamination water before placing water into the tank. DuPont will characterize and dispose of the decontamination water.

Seeding of the non hazardous soil excavations in the upland areas will be completed after each excavation area is completed. The contractor agreed upon by DuPont and TNC will reseed using a native seed mix stipulated by Paul Labus of TNC. Mr Labus has directed DuPont to not use any fertilizer for the reseed tasks.

The non hazardous soil stockpiles shall be completed by performing seeding and mulching as soon as practical upon completion of stockpiling.

Reseeding of the wetland areas will be conducted by The Nature Conservancy or the contractor under the direction of TNC. The wetland excavation areas will not be final graded except to maintain the natural drainage to the Natural Area.

Contractor shall maintain interim erosion control measures as needed during the project and provide any repairs needed to erosion control structures. At project completion all temporary erosion control equipment not delineated to remain in-place shall be removed.

Restore the site haul road and pavements damaged during the work and remove any temporary haul roads installed to perform the work.

Perform final inspection, incorporate the final punch list items, and take post construction photographs.

Demobilize equipment and personnel.

### ***B3 - Stable construction entrance locations and specifications:***

There are approximately 2000' of paved road on the DuPont site (internal roads) between the construction zone and the first public roadway. Figure 1 shows the size of property owned by DuPont (410 acres) and the proportionally small size of the construction site for this project (approximately 30 acres including excavations and stockpile areas). Due to this long internal roadway, the location of the construction work taking place over 2000' from the nearest public road, and with DuPont planning to have the contractor minimize travel routes by equipment which might get muddy or dirty, a construction entrance may not be warranted for this project.

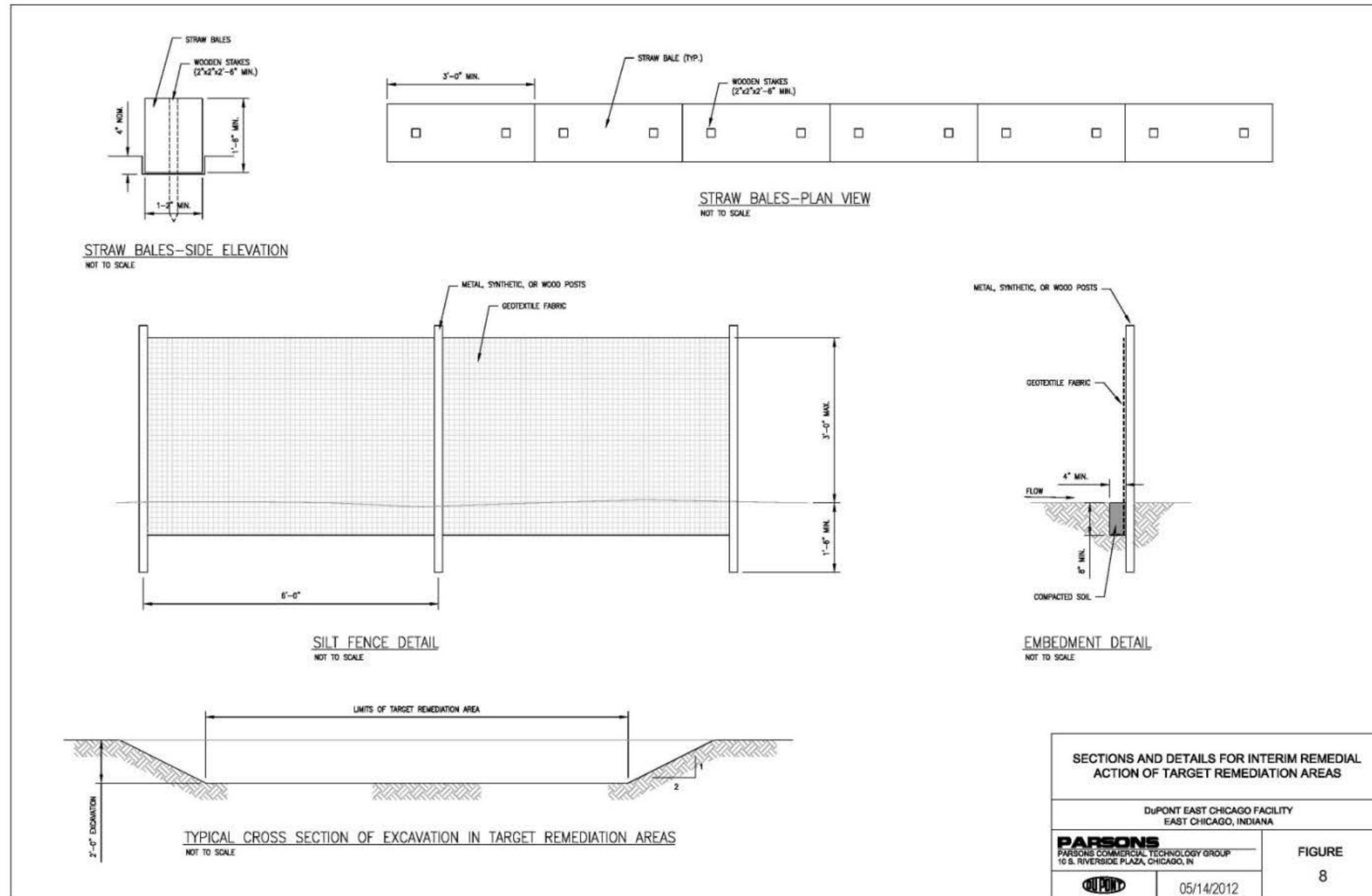
During the bidding meeting and in negotiations with the contractor, the DuPont Site Representative will emphasize the desire to have the contractor limit the number of pieces of equipment entering excavations and the soil stockpile areas. If site operations do show the potential for any soil to be dispersed onto a public road, the contractor will be required to modify practices or install appropriate control measures to prevent any soil dispersal offsite.

***B4 - Sediment control measures for sheet flow areas:***

Figures 4, 7 and 8 show the locations and types of erosion control measures to be installed and maintained. Figure 8 shows the sections and details for erosion control structures.

Due to the natural grading of the existing site topography and the project's plan to keep the final grading similar to the existing grading, very little sheet flow is anticipated.

Figure 8 Sections and Details for Erosion Control Structures



Information on the project erosion control installation, maintenance, inspection and demobilization is provided in Section B2 above. Additional information is provided in several of the subsections of Part B and Part C of this document.

***B5 - Sediment control measures for concentrated flow areas:***

Section B 4 above provides information fulfilling requirements of this Section.

***B6 - Storm sewer inlet protection measure locations and specifications:***

Not applicable. No storm sewers in this area of the site.

***B7 - Runoff control measures:***

Section B 4 above provides information fulfilling requirements of this Section.

***B8 - Storm water outlet protection specifications:***

Section B 4 above provides information fulfilling requirements of this Section.

***B9 - Grade Stabilization structure locations and specifications:***

Not applicable. Final grade will be very similar to existing grade.

***B10 - Location, dimensions, specifications and construction details of each Storm water quality measure:***

Section B 4 above provides information fulfilling requirements of this Section.

***B11 - Temporary surface stabilization methods appropriate for each season:***

The detailed specifications and sequencing information for temporary surface stabilization is provided in Sections B4 and B2 above.

The scheduled completion date for all field tasks is January 2013. In the event any of the work which could affect runoff (excavation, final grading, stockpiling and revegetation) were not completed by January 2013, a contingency plan will be implemented to revegetate uplands areas and non-hazardous stockpiles. All erosion control structures at any areas where tasks or

revegetation were not completed will be assessed and maintained until excavation and stockpiling are completed in the spring.

Seeding of the non hazardous soil excavations in the upland areas will be completed after each excavation area is completed. The contractor agreed upon by DuPont and TNC will reseed using a native seed mix stipulated by Paul Labus of TNC. Mr Labus has directed DuPont to not use any fertilizer for the reseed tasks, and he will be directing the contractor's reseeding activities.

The non hazardous soil stockpiles shall be completed by performing seeding and mulching as soon as practical upon completion of stockpiling. This seed mix and all associated tasks will again be stipulated by Paul Labus of TNC.

Reseeding of the wetland areas will be conducted by The Nature Conservancy or the contractor under the direction of TNC. The wetland excavation areas will not be final graded except to maintain the natural drainage to the Natural Area.

#### ***B12 - Permanent surface stabilization specifications:***

The permanent surface stabilization plans are to implement site final grading to minimize the potential for erosion, perform revegetation of disturbed areas with native plants, and continue long-term maintenance of vegetation. Several of the specific details of the permanent surface stabilization specifications are detailed in other Section B subsections of this document.

A vegetation restoration plan is being finalized between DuPont and TNC to identify key resources, methods, and provisions for project success for ecological restoration activities after excavation activities. Sensitive habitat areas were identified with the assistance of Nature Conservancy staff.

#### ***B13 - Material handling and spill prevention plan:***

Section B1 details the procedures for this section. The contractor will minimize the disturbance of excavated soils by minimizing the number of times the soil is handled or impacted.

#### ***B14 - Monitoring and maintenance guidelines for each proposed pollution prevention measure:***

During construction activities the contractor will be required to inspect the upland portions of the construction area for storm water pollution prevention deficiencies at least weekly and again within 24 hours of every ½ inch rain event. In addition, the DuPont Site Representative and/or TNC staff will inspect the wetland portions of the construction area for storm water pollution prevention deficiencies at least weekly and again within 24 hours of every ½ inch rain event.

These inspections will include the following:

- observing the existing erosion control structures for possible issues or build up of silt,

- observing general construction areas for recent erosion or possible future erosion potential at areas not protected by erosion control structures, and
- communicating effectiveness, maintenance being performed, or planned modifications to the erosion control system to the DuPont Site Representative and/or TNC.

***B15 - Erosion & Sediment control specifications for individual building lots:***

Not applicable to this project.

***C1 - Description of pollutants and their sources associated with the proposed land use.***

This project does not include any significant long-term change in land use or impervious cover from the existing conditions.

***C2 - Sequence describing storm water quality measure implementation.***

Information fulfilling this requirement is provided in Sections B1, B2 and B4 above.

***C3 - Description of proposed post construction storm water quality measures.***

This project does not include any significant long-term change in land use or impervious cover from the existing conditions.

TNC and DuPont will assess the effectiveness of SWPPP elements during and after excavation activities to determine if there may be a need to design, install and maintain additional post construction storm water quality measures.

***C4 - Location, dimensions, specifications and construction details of each Storm water quality measure.***

Information on the location, dimensions, specifications and construction details for stormwater quality measures are provided on Figures 4, 7 and 8, and as detailed in the above Sections of this plan.

***C5 - Description of maintenance guidelines for proposed post construction water quality measures.***

Ongoing maintenance of the site for water quality measures will be performed in conjunction by TNC and DuPont.

DuPont, with input from TNC, will hire a landscaping contractor to perform revegetation tasks during excavation activities and for post construction vegetation maintenance. DuPont and TNC shall direct this contractor in a manner to meet the requirements listed in the Section 401 Water Quality Certification Permit (dated 4/11/2012) and the 404 Nationwide Permit (dated 3/28/2012) for this Project.

The requirements of the 404 Nationwide Permit (dated 3/28/2012) for this Project requires the following:

1. 404 Permit, Item 2: ...temporary cover crop shall be planted on all slopes immediately upon completion of any earthwork to prevent soil erosion. **Within three months, at least 90% of this area, as measured by aerial coverage, will be vegetated.**
2. 404 Permit, Item 4: ...**manage the revegetated areas for three years to ensure the planted species are successful. Management will include supplemental seeding where necessary and removal or treatment of invasive species.**

In addition, DuPont will assess percent vegetation cover at 6 months and one year after excavation activities are complete.



REPLY TO  
ATTENTION OF:

**DEPARTMENT OF THE ARMY**  
CHICAGO DISTRICT, CORPS OF ENGINEERS  
111 NORTH CANAL STREET  
CHICAGO, ILLINOIS 60606-7206

October 22, 2012

Technical Services Division  
Regulatory Branch  
LRC-2012-11

**SUBJECT:** Nationwide Permit Modification authorization for the removal of additional contaminated soils located at 5215 Kennedy Avenue in East Chicago, Lake County, Indiana

DuPont Corporate Remediation Group  
Attn: Mr. Sathya Yalvigi  
4417 Lancaster Pike CRP 715/218  
Wilmington, DE 19805

Dear Mr. Sathya Yalvigi:

This is in reference to your letter dated September 21, 2012 in which you requested a modification to your Nationwide Permit Program authorization granted on March 28, 2012.

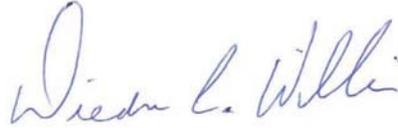
This office has reviewed your plans to excavate and remove contaminated materials in an additional 1.45 acres of waters of the U.S. and has no objection to the proposed revisions. Except as changed herein, all terms and conditions of the original authorization remain in full force and effect, including the expiration date of March 28, 2015 which is the original authorization date of your authorization. You are directed to attach this letter and the revised plans to all copies of the permit, including those at the work site.

It is your responsibility to obtain or modify required state or local approvals for the revision before commencing any work. Furthermore, if it becomes necessary to request further modification of the authorized project, this office reserves the right to re-evaluate the project pursuant to new regulations, procedures, or policies.

This determination covers only your project as described above and as shown in the "Proposed Excavation Areas" plan dated September 18, 2012, and prepared by Parsons. In addition you are required to implement the "Vegetation Restoration Plan, Revision 1" dated September 2012, prepared by Parsons. Caution should be taken so that construction materials and/or activities do not enter any waterway or wetlands beyond the scope of this determination. If the design, location or purpose of the project is changed, you should contact this office to determine the need for other authorization.

If you have any questions, please contact Mr. Paul Leffler of my staff by telephone at 312-846-5529, or email at Paul.M.Leffler@usace.army.mil.

Sincerely,

A handwritten signature in blue ink that reads "Diedra L. Willis". The signature is written in a cursive style with a large initial 'D'.

Diedra Willis  
Indiana Team Leader  
Regulatory Branch

Copy Furnished:

IDEM (Mr. Maupin)  
USFWS (Ms. McCloskey)  
Parsons (Mr. Randy Palachek)



**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**

*We Protect Hoosiers and Our Environment.*

*Mitchell E. Daniels Jr.*  
Governor

*Thomas W. Easterly*  
Commissioner

100 North Senate Avenue  
Indianapolis, Indiana 46204  
(317) 232-8603  
Toll Free (800) 451-6027  
[www.idem.IN.gov](http://www.idem.IN.gov)

April 11, 2012

**VIA CERTIFIED MAIL** 91 7190 0005 2710 0020 8071

Mr. Sathya V. Yalvigi  
4417 Lancaster Pike CRP 715/218  
Wilmington, DL 19805

Dear Mr. Yalvigi:

Re: Section 401 Water Quality Certification  
Project: Buffer Zone Interim  
Remediation Measures, Dupont  
East Chicago, Indiana  
IDEM No.: 2012-013-45-MTM-A  
County: Lake

The Office of Water Quality has reviewed your application for Section 401 Water Quality Certification dated January 15, 2012, and received January 24, 2012. According to the application, you propose to excavate and re-contour seven wetland areas totaling 7.36 acres (5.98 acres of emergent wetland and 1.38 acres of forested wetland). The purpose of the work is to remove contaminated soil and prevent transport of contaminated soil into the Natural Area. The work is the implementing of Interim Remedial Measures under the Resource Conservation and Recovery Act. The Natural Area is a 172 acre portion of the project site that in 2009 DuPont gave IDNR a conservation easement. Presently, DuPont, IDNR and the Nature Conservancy are working together to protect, restore, and manage the area. The project is located in the Northwest ¼ of Section 34 of Township 37 North and Range 9 West in East Chicago, Lake County.

Based on available information, it is the judgment of this office that the proposed project will comply with the applicable provisions of 327 IAC 2 and Sections 301, 302, 303, 306, and 307 of the Clean Water Act if you comply with the conditions set forth below. Therefore, subject to the following conditions, the Indiana Department of Environmental Management (IDEM) hereby grants Section 401 Water Quality Certification for the project described in your application received January 24, 2012. Any changes in project design or scope not detailed in the application described above or modified by the conditions below are not authorized by this certification.

**CONDITIONS OF THE SECTION 401 WATER QUALITY CERTIFICATION:**

You shall:

- 1) Deposit any dredged material in a contained upland disposal area to prevent sediment runoff to any waterbody.
- 2) Install erosion control methods prior to any soil disturbance to prevent soil from leaving the construction site. Appropriate erosion control methods include, but are not limited to, straw bale barriers, silt fencing, erosion control blankets, phased construction sequencing, and earthen berms. Monitor and maintain erosion control structures and devices regularly, especially after rain events, until all soils disturbed by construction activities have been permanently stabilized.
- 3) Install silt fence or other erosion control measures around the perimeter of any wetlands and/or other waterbodies to remain undisturbed at the project site.
- 4) Allow the commissioner or an authorized representative of the commissioner (including an authorized contractor), upon the presentation of credentials:
  - a) to enter your property, including impact and mitigation site(s);
  - b) to have access to and copy at reasonable times any records that must be kept under the conditions of this certification;
  - c) to inspect, at reasonable times, any monitoring or operational equipment or method; collection, treatment, pollution management or discharge facility or device; practices required by this certification; and any mitigation wetland site;
  - d) to sample or monitor any discharge of pollutants or any mitigation site.
- 5) Complete all approved discharges no later than two (2) years of the date of issuance of this Section 401 Water Quality Certification. You may request a one (1) year extension to the Section 401 Water Quality Certification by submitting a written request ninety (90) days prior to the deadline stated above. The written request shall contain an account of which discharges and mitigation have been completed and list the reasons an extension is requested.

This certification does not relieve you of the responsibility of obtaining any other permits or authorizations that may be required for this project or related activities from IDEM or any other agency or person. You may wish to contact the Indiana Department of Natural Resources at 317-232-4160 (toll free at 877-928-3755) concerning the possible requirement of natural freshwater lake or floodway permits. In addition, you may wish to contact IDEM's Storm Water Permits Section at 317-233-1864 concerning the possible need for a 327 IAC 15-5 (Rule 5) permit if you plan to disturb greater than one (1) acre of soil during construction.

This certification does not:

- (1) authorize impacts or activities outside the scope of this certification;
- (2) authorize any injury to persons or private property or invasion of other private rights, or any infringement of federal, state or local laws or regulations;
- (3) convey any property rights of any sort, or any exclusive privileges;
- (4) preempt any duty to obtain federal, state or local permits or authorizations required by law for the execution of the project or related activities; or
- (5) authorize changes in the plan design detailed in the application.

Failure to comply with the terms and conditions of this Section 401 Water Quality Certification may result in enforcement action against you. If an enforcement action is pursued, you could be assessed up to \$25,000 per day in civil penalties. You may also be subject to criminal liability if it is determined that the Section 401 Water Quality Certification was violated willfully or negligently.

This certification is effective eighteen (18) days from the mailing of this notice unless a petition for review and a petition for stay of effectiveness are filed within this 18-day period. If a petition for review and a petition for stay of effectiveness are filed within this period, any part of the certification within the scope of the petition for stay is stayed for fifteen (15) days, unless or until an Environmental Law Judge further stays the certification in whole or in part.

This decision may be appealed in accordance with IC 4-21.5, the Administrative Orders and Procedures Act. The steps that must be followed to qualify for review are:

- 1) You must petition for review in writing that states facts demonstrating that you are either the person to whom this decision is directed, a person who is aggrieved or adversely affected by the decision, or a person entitled to review under any law.
- 2) You must file the petition for review with the Office of Environmental Adjudication (OEA) at the following address:

Office of Environmental Adjudication  
100 North Senate Avenue  
IGCN Room N501  
Indianapolis, IN 46204

- 3) You must file the petition within eighteen (18) days of the mailing date of this decision. If the eighteenth day falls on a Saturday, Sunday, legal holiday, or other day that the OEA offices are closed during regular business hours, you may file the petition the next day that the OEA offices are open during regular business hours. The petition is deemed filed on the earliest of the following dates: the date it is personally delivered to OEA; the date that the envelope

containing the petition is postmarked if it is mailed by United States mail; or, the date it is shown to have been deposited with a private carrier on the private carrier's receipt, if sent by private carrier.

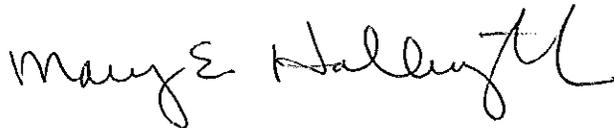
Identifying the certification, decision, or other order for which you seek review by number, name of the applicant, location, or date of this notice will expedite review of the petition.

Note that if a petition for review is granted pursuant to IC 4-21.5-3-7, the petitioner will, and any other person may, obtain notice of any prehearing conferences, preliminary hearings, hearings, stays, and any orders disposing of the proceedings by requesting copies of such notices from OEA.

If you have procedural questions regarding filing a petition for review you may contact the Office of Environmental Adjudication at 317-232-8591.

If you have any questions about this certification, please contact Mr. Marty Maupin, Project Manager, of my staff by phone at 317-223-9880 or by e-mail at [mmaupin@idem.in.gov](mailto:mmaupin@idem.in.gov) or you may contact the Office of Water Quality through the IDEM Environmental Helpline (1-800-451-6027).

Sincerely,



Mary E. Hollingsworth, Branch Chief  
Surface Water, Operations & Enforcement Branch  
Office of Water Quality

cc: Paul Leffler, USACE- Chicago District  
Liz McCloskey, USFWS  
Lori White, Regional Env. Biologist, IDNR  
Randy Palchek, Parsons Corporation



**DEPARTMENT OF THE ARMY**  
CHICAGO DISTRICT, CORPS OF ENGINEERS  
111 NORTH CANAL STREET  
CHICAGO, ILLINOIS 60606-7206

REPLY TO  
ATTENTION OF:

March 28, 2012

Technical Services Division  
Regulatory Branch  
LRC-2012-11

SUBJECT: Nationwide Permit authorization for the removal of contaminated soils located at 5215 Kennedy Avenue in East Chicago, Lake County, Indiana

DuPont Corporate Remediation Group  
Attn: Mr. Sathya Yalvigi  
4417 Lancaster Pike CRP 715/218  
Wilmington, DE 19805

Dear Mr. Sathya Yalvigi:

This is in response to your permit application and plans for the above-referenced project. The U.S. Army Corps of Engineers has determined that your project is authorized by the existing Department of the Army Nationwide Permit number 38 (Cleanup of Hazardous and Toxic Waste) as published in the Federal Register on March 12, 2007. The subject activity may be performed without further authorization from this office provided that the activity complies with the Nationwide Permit terms and the special conditions listed below. The special conditions deemed necessary for this project are as follows:

1. Installation of silt fence, or other appropriate soil erosion and sediment control measures (SESC), around excavation areas and the soil storage area. You must maintain these measures throughout the duration of construction to ensure they are effective in preventing sediment from escaping the area.
2. A temporary cover crop shall be planted on all slopes immediately upon completion of any earthwork to prevent soil erosion. An erosion control blanket may also be required depending on site conditions. Within three (3) months, at least 90% of this area, as measured by aerial coverage, will be vegetated. All cover crop species shall be non-persistent or native and not allelopathic.
3. Revegetate disturbed areas as outlined in your "Vegetation Restoration Plan" dated December 21, 2011, prepared by Parsons. Species selected for the planting shall be native to the area (ref. Swink and Wilhelm, Plants of the Chicago Region, 1994), and shall be appropriate for the hydrologic zone to be planted.
4. Manage the revegetated areas for three years to ensure the planted species are successful. Management will include supplemental seeding where necessary and removal or treatment of invasive species.

This determination covers only your project as described above and in the Grading Plans dated December 9, 2011, prepared by Parsons. Caution should be taken so that construction materials and/or activities do not enter any waterway or wetlands beyond the scope of this authorization. If the design, location, or purpose of the project is changed, you should contact this office to determine the need for further authorization.

This verification is valid for three years from the date of this letter. If it is anticipated that the activity as described cannot be completed within the time limits of this authorization, you must submit any request for a time extension to this office at least thirty (30) calendar days before the expiration date is reached. Failure to do so may result in the District's reevaluation of your project, which may include the issuance of a public notice. This determination is applicable only to the permit program administered by the U.S. Army Corps of Engineers. It does not eliminate the need to obtain all other required Federal, State or local approvals before beginning work.

For any additional information on the RGP, please access our website: [www.lrc.usace.army.mil/co-r](http://www.lrc.usace.army.mil/co-r). Once you have completed the authorized activity, please sign and return the enclosed compliance certification. If you have any questions, please contact Mr. Paul Leffler of my staff by telephone at 312-846-5529, or email at [paul.m.leffler@usace.army.mil](mailto:paul.m.leffler@usace.army.mil).

Sincerely,



Diedra L. Willis  
Indiana Team Leader  
Regulatory Branch

Enclosure

IDEM (Mr. Maupin)

USFWS (Ms. McCloskey)

The Nature Conservancy  
Attn: Mr. Paul Labus  
2400 New York Avenue  
Whiting, Indiana 46394

Randy Palachek  
Parsons Engineering Science, Inc.  
8000 Centre Park Drive  
Austin, Texas 78754

CELRC-TS-R  
Application LRC-2012-11

**MEMORANDUM FOR RECORD**

**SUBJECT:** Department of the Army Memorandum Documenting Nationwide Permit/Regional General Permit Verification

**Applicant:** DuPont Corporate Remediation Group

**Project Description (Describe activities in waters of the U.S. considered for verification):**  
Removal of contaminated soils

**Project Location (Waterway, Section, Township, Range, City, County, State):** 5215 Kennedy Avenue in East Chicago, Lake County, Indiana (Section 33, Township 37 N, Range 9 W), Latitude: 41.619205, Longitude: -87.456174

**Waters of the US: Grand Calumet River**

\*see Jurisdictional Determination form(s) and/or Preliminary JD letter(s) dated:

**Authority:** Section 10 Section 404

**Type of Permit Requested:** NWP # 38

**Pre-construction Notification Required:** Yes No

**Pre-Construction Notification Receipt Date:** December 21, 2011  
**Complete?** Yes No

**Pre-Construction Notification Complete Date:** March 15, 2012

**Coordination with Agencies/Tribes Needed (PCN/ARC):**

Yes No Date:  
Resolution:

**Commenting Agencies:**

US Fish and Wildlife Service Yes No  
US Environmental Protection Agency Yes No

**Substantive Issues Raised and Corps Resolution (Consideration of Comments):** N/A

**Compliance with Other Federal Laws (If specific law is not applicable write N/A):**

**a) Endangered Species Act (ESA):** n/a

Applicant submitted ESA information for review: **Choose One**

Effects determination: **Choose One**

Basis for "no effect" determination: **Choose One**

SUBJECT: Department of the Army Memorandum Documenting Nationwide Permit/Regional General Permit Verification for the Above-Numbered Permit Application

Name of species present:

Date of Service(s) concurrence:

Additional information (optional):

**b) Magnuson-Stevens Act (Essential Fish Habitat): N/A**

Name of species present:

Effects determination:

Date of Service(s) concurrence:

Basis for "no effect" determination:

Additional information (optional):

**c) Section 106 of the National Historic Preservation Act: n/a**

Known site present: yes no

Survey required/conducted: yes no

Effects determination:

Rationale:

Date consultation complete (if necessary):

Additional information (optional):

**d) Section 401 Water Quality Certification:**

Individual certification required: yes no

Issued Waived Denied

**e) Coastal Zone Management Act: n/a**

Individual certification required: yes no

Issued Waived Denied

Additional information (optional):

**f) Wild and Scenic Rivers Act: N/A**

**g) Other:**

**Special Conditions required (include rationale for each required condition/explanation for requiring no special conditions):** yes no

Rationale: Special Conditions, if required, were added to ensure that the project would result in no more than minimal individual and cumulative adverse environmental effects.

**Compensatory Mitigation Determination:** The applicant has avoided and minimized impacts to the maximum extent practicable.

- (1) Is compensatory mitigation required for unavoidable impacts to jurisdictional aquatic resources to reduce the individual and cumulative adverse environmental effects to a minimal level?

SUBJECT: Department of the Army Memorandum Documenting Nationwide Permit/Regional General Permit Verification for the Above-Numbered Permit Application

yes no [If "no," do not complete the rest of this section and include an explanation of why not here]: Mitigation is not required for impacts of less than 0.1 acre.

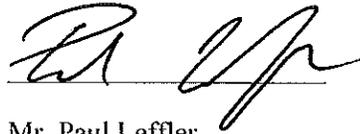
- (2) Is the impact in the service area of an approved mitigation bank? yes no
- i. Does the mitigation bank have appropriate number and resource type of credits available? yes no
- (3) Is the impact in the service area of an approved in-lieu fee program? yes no
- i. Does the in-lieu fee program have appropriate number and resource type of credits available? yes no
- (4) Check the selected compensatory mitigation option(s):
- mitigation bank credits
  - in-lieu fee program credits
  - permittee-responsible mitigation under a watershed approach
  - permittee-responsible mitigation, on-site and in-kind
  - permittee-responsible mitigation, off-site and out-of-kind
- (5) If a selected compensatory mitigation option deviates from the order of the options presented in §332.3(b) (2)-(6), explain why the selected compensatory mitigation option is environmentally preferable. Address the criteria provided in §332.3(a)(1) (i.e., the likelihood for ecological success and sustainability, the location of the compensation site relative to the impact site and their significance within the watershed, and the costs of the compensatory mitigation project):

**Determination (Reference General Condition 27(e)):**

The proposed activity, with proposed mitigation (if applicable) would result in no more than minimal individual and cumulative adverse environmental effects and would not be contrary to the public interest and *provided the special conditions and/or modifications identified in the above are incorporated*. This project complies with all terms and conditions of NWP 38 including any applicable regional conditions.

SUBJECT: Department of the Army Memorandum Documenting Nationwide Permit/Regional General Permit Verification for the Above-Numbered Permit Application

**PREPARED BY:**



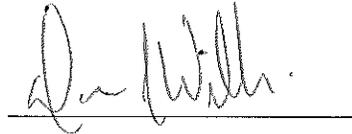
Mr. Paul Leffler

Project Manager

Regulatory Branch

Date: 3/27/12

**REVIEWED BY:**



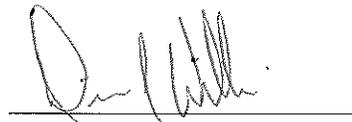
Diedra Willis

Indiana Team Leader

Regulatory Branch

Date 3-30-12

**APPROVED BY:**



For and on behalf of

Leesa A. Beal, Chief,

Regulatory Branch,

Chicago District

Date 3-30-12

**APPENDIX B  
FIELD SAMPLING PLAN  
BUFFER ZONE IRM SOIL EXCAVATION  
AND MANAGEMENT  
DATED SEPTEMBER 2012**



**PARSONS**

**FIELD SAMPLING PLAN  
BUFFER ZONE INTERIM  
REMEDIAL MEASURES SOIL  
EXCAVATION AND MANAGEMENT  
DUPONT EAST CHICAGO SITE  
EAST CHICAGO, INDIANA**

*Prepared for:*

E. I. du Pont de Nemours and Company  
Corporate Remediation Group  
Chestnut Run Plaza  
974 Centre Road  
Wilmington, DE 19805

*Prepared by:*

**PARSONS**  
8000 Centre Park Drive, Suite 200  
Austin, Texas 78754

September 2012

DuPont PN 507754  
Parsons PN 446868



## TITLE AND APPROVAL PAGE

Site Name: DuPont East Chicago Site  
Site Location: East Chicago, Indiana  
Document Title: Field Sampling Plan Buffer Zone Interim Remedial Measures Soil  
Excavation and Management  
Revision: 0  
Lead Organization: DuPont Corporate Remediation Group (CRG)  
Preparer: Parsons  
Date of Preparation: September 2012

Approvals:

\_\_\_\_\_  
Sathya V. Yalvigi, DuPont Project Director

\_\_\_\_\_  
Date

\_\_\_\_\_  
Clint Betchan, DSR/Construction Manager

\_\_\_\_\_  
Date

\_\_\_\_\_  
Keith Thompson, Field Representative

\_\_\_\_\_  
Date



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## APPENDICES

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## ACRONYMS

Acronym	Definition / Description
AOC	Area of Concern
CERCLA	Comprehensive Environmental Remediation and Compensation Liability Act
CESQG	Conditionally Exempt Small Quantity Generator
COC	Contaminant of Concern
C-O-C	Chain-of-Custody
COPC	Contaminants of Potential Concern
CRG	Corporate Remediation Group
EPA	United States Environmental Protection Agency
FSP	Field Sampling Plan
HASP	Health and Safety Plan
LQG	Large Quantity Generator
PPE	Personal Protective Equipment
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
TNC	The Nature Conservancy
XRF	X-ray Fluorescence

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## 1.0 INTRODUCTION

E.I. du Pont de Nemours and Company (DuPont) is implementing Interim Remedial Measures (IRMs) at the East Chicago Site as part of the corrective action program under the Resource Conservation and Recovery Act (RCRA). The IRM activities, when completed, will be part of the overall corrective action for the Site to address the potential impacts from the presence of chemical constituents of concern (COC) in soil.

### Description:

Operations were discontinued at DuPont's 410 acre East Chicago Facility in 1986. During production, the western developed area was used mainly primarily for manufacturing purposes, while the northwest and central sections were used as waste management areas. Currently, most of the previously active manufacturing areas have been decommissioned and the production facilities have been removed. The eastern portion of the East Chicago Site, approximately 163 acres, was not developed and retained its original plains/dunes geomorphology and associated plant communities. Commonly referred to as the Natural Area, this section of the East Chicago Site is currently managed by The Nature Conservancy for habitat preservation.

IRM measures have been developed for implementation in a Buffer Zone that separates the former manufacturing and waste disposal areas from the Natural Area. The IRM objective is to minimize potential contaminant migration into sensitive habitat in the Natural Area, and extend coverage of existing high-quality habitat in the Buffer Zone. The IRM includes excavation of soil containing lead, arsenic, cadmium and zinc and confirmation soil sampling. Additional soil samples will be collected between the excavations to re-evaluate ecological risk in the Buffer Zone once the IRM activities are completed. Air monitoring for worker and site protection will be performed in conjunction with the excavation activities

Confirmation soil sampling will be performed after the following activities have been completed:

1. Potentially hazardous soil has been excavated,
2. Removal of the remaining contaminated soil sources has been completed.

Additional characterization soil samples will be collected between the excavated areas to re-evaluate ecological risk in the Buffer Zone once the IRM activities are completed.

Air monitoring for safety of nearby residents and site personnel will include the following:

1. Full time meteorological and dust monitoring onsite,
2. Periodic real-time monitoring of air quality for particulate matter (PM<sub>10</sub>), lead, arsenic and cadmium at locations downwind of work tasks,
3. Periodic real-time monitoring of air in the worker's breathing zone, and
4. The construction contractor will perform air sampling for lead, arsenic and cadmium in the worker's breathing zone. This air sampling is not discussed further in this document; however it is detailed in the safety plan and addendum.

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## 2.0 SAMPLING PLAN

### Soil Sampling

#### Post Excavation Sampling of all Potentially Hazardous Soil Locations

Around each sample predicted to potentially exceed TCLP (potentially hazardous soil location), a 25 by 25-foot square, 2-feet deep will be excavated. Confirmation sampling will be conducted along each excavation bottom and each sidewall to assess whether the excavation is complete or must be extended further.

Each excavation of a potentially hazardous soil location will be screened using an X-ray Fluorescence meter (XRF) in the field. The XRF will be used to measure metals concentrations in each of the four excavation walls and the excavation floor.

If field results of any horizontal wall XRF measurements indicate concentrations that exceed calculated TCLP concentrations, the contractor shall extend the excavation an additional five feet in the horizontal direction of the exceedance. The contractor will continue to step out five feet horizontally until XRF measurements indicate concentrations below the TCLP values.

XRF screening will also be performed on the bottom of all potentially hazardous soil location excavations. XRF measurements on the excavation floor that indicate the soil contains a COC at or above the criteria will be further excavated. This subsequent excavation of the bottom may extend to a maximum depth of four feet below grade.

When XRF measurements and best field judgment at a potentially hazardous soil excavation location indicate that all results are below the criteria, a confirmation composite soil sample will be collected. This five-part composite sample will contain one part from each of the four sidewalls and one part from the bottom of the excavation. This sample will be analyzed for total arsenic, lead, and cadmium from the analytical laboratory to confirm that the excavation of soil with potentially hazardous concentrations of the COCs at that location is complete. Sub-sample aliquots will not be stored or shipped to the laboratory for future analysis. The XRF measurements and subsequent documentation will take the place of sub-sample holding.

Figure 1 shows the location of the IRM areas and the potentially hazardous soil excavation locations. The potentially hazardous soil excavation areas are indicated with green colored dots on Figure 1.

#### Post Excavation Sampling of all Excavated Areas

Post-excavation sampling will be conducted at all excavated IRM areas to verify removal of soil contaminant sources. Soil composite samples will be collected from the bottom of the excavation footprint at a rate of four samples per acre. Figure 1 indicates the general locations of these samples within IRM sites. These locations are indicated with red plus (+) signs on Figure 1.

Each soil composite sample will be prepared by combining five sub-samples from the excavation bottom near each red plus sign on Figure 1 to provide an area-weighted average concentration for each sample. A six-inch subsample depth will be used for the excavation floor. These samples will be analyzed for total arsenic, lead, cadmium and zinc at the analytical laboratory.

#### Buffer Zone Characterization Soil Samples

Figure 1 indicates the general locations of these samples between IRM sites. These locations are indicated with purple colored plus (+) signs on Figure 1.

Each soil composite sample will be prepared by combining five sub-samples from the existing soil grade to provide an area-weighted average concentration. A six-inch subsample depth will also be used for sample collection in the Buffer Zone and these samples will be analyzed for total arsenic, lead, cadmium, and zinc.

### **Air Sampling**

The contractor will implement dust suppression measures such as water spraying to help control particulate concentrations in the air. Four types of air monitoring will be performed during the work activities. A complete description of the air monitoring procedures is provided in Appendix Q of the project HASP (project HASP under separate cover). The Parsons supervisor will submit air monitoring results to DuPont and Parsons Health and Safety weekly. A summary of the air monitoring/sampling types is provided below.

#### **Meteorological Conditions Monitoring**

Meteorological data will be continuously recorded from the beginning to the end of the remediation work using an on-site meteorological monitoring station located in a central area of the Site. The station will record the following parameters:

- wind speed;
- wind direction;
- air temperature;
- relative humidity (RH);
- barometric pressure; and
- precipitation

The meteorological station will be located in an area that is clear of buildings, trees, or other obstructions, at a height of approximately 10 feet above ground or more, in accordance with USEPA citing and exposure criteria (USEPA 2008).

#### **Work Area/Work Space Air Sampling**

The objective of this air sampling component is to assess concentrations of dust in the immediate work area. Real-time measurements for dust particles at work spaces will be obtained using a *persona*DataRAM or equivalent meter.

Data collection will occur immediately at excavation activities as close to the worker breathing space as possible. Measurements will also be collected upwind and downwind of excavation activities. Readings will be collected at least twice per day of excavation activity.

#### **Downwind or Site Perimeter Particulate Monitoring**

Downwind sampling for PM<sub>10</sub> and metals will be performed at the downwind site perimeter or at least 100 to 200 feet downwind of work activities. A MiniVol PM<sub>10</sub> low volume sampler will be used to collect PM<sub>10</sub> and metals samples. This will occur at least

one day per week during excavation tasks. The metals analysis (lead, arsenic and cadmium) will be performed on filters which will be analyzed by an approved laboratory. This will be accomplished by sampling over an 8 to 10-hour period corresponding to a construction day for a representative number of days over the duration of the construction work. PM<sub>10</sub> is selected as the dust type to sample as it is invisible in the ambient air and is the basis for State and National ambient air quality 24-hour particulate standards.

#### Personnel Monitoring

The contractor will sample for lead, arsenic, and cadmium in the worker breathing zone to assess worker exposure levels using NIOSH Method 7300. Analysis of these samples will be performed by an American Industrial Hygiene Association (AIHA) approved laboratory. Further information on this sampling and analysis is provided in the Contractor's Addendum to the project HASP.

The contractor will provide results of their personnel exposure devices weekly to the Parsons site supervisor to document that the appropriate PPE levels were used.

For additional specifications, see the Air Monitoring Plan included in the HASP provided under separate cover.

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### 3.0 SAMPLING METHODS

This section describes the field methodologies and procedures proposed for this IRM. The field activities will be conducted in accordance with this FSP, the HASP and the Contractor's HASP Addendum.

#### 3.1 General Field Procedure Guidelines

To ensure that sampling is implemented correctly and safely, the following five actions will be completed prior to the start of field activities:

- The QA officer will notify the laboratory of the upcoming sampling event so that the laboratory can prepare the appropriate type and number of sample containers. The anticipated number of samples, a list of analytes, the replicate requirements, and the number of extra bottles needed for quality control (QC) testing will be specified to the laboratory manager.
- The field team will inspect and calibrate all equipment to be used during the sampling event.
- The field sampling team and/or the quality assurance officer will assemble all forms to be used in the field, including the field log book, chain-of-custody (C-O-C) sheets and seals, and sample analysis request forms.
- Laboratory personnel will partially pre-label bottles during the mobilization phase of the sampling event to improve accuracy and increase efficiency in the field. This information (e.g., preservative and type of parameters) may be modified during pre-field activities should a review of sample information necessitate doing so. Other information (e.g., sample identification number, sample time and date, samplers' initials) will be added to the label only after the sample is collected.
- Sampling personnel will review proper sampling protocols and proper health and safety protocols, as identified in the site HASP, prior to sampling.

Sampling preparation will include acquiring all necessary monitoring equipment and site-specific information. Prior to field mobilization, field maps will be provided to the field staff depicting the locations of initial sampling points. The proposed soil sample will be surveyed and staked prior to each respective task. Scheduling and coordination of the sampling program with the sampling team will be completed prior to field mobilization and then reviewed periodically. Review of procedures and protocols will be completed as required.

The field team leader or a senior member of the field team will be responsible for sampling and coordination. The laboratory will provide necessary sample containers with the shipping containers. Containers and any preservative added to the containers will be in accordance with EPA SW-846 protocols (EPA, 1998a). All samples requiring refrigeration will be shipped at 4 degrees Celsius, +/- 2 degrees.

#### 3.2 Air Monitoring and Sampling Methods

Information on these tasks is provided in Section 2.0 above and more detail on procedures and equipment can be found in the Air Monitoring Plan and Appendix Q of the project HASP provided in separate cover.

### 3.3 Soil Sampling Methods

Upon completion of an excavated area, soil samples will be collected using decontaminated stainless steel shovels or trowels and hand augers. Sub-samples will be mixed in decontaminated stainless steel bowls prior to collection of the composite samples.

### 3.4 Calibration Procedures

Calibration is the process of establishing a relationship between the measured output and the known input, and provides a point of reference to which other sample analyses can be correlated. Each instrument will be calibrated prior to its first use each day, and in accordance with the recommendations of the manufacturer. More frequent calibration will be conducted as necessary, based on instrument performance checks, the manufacturer's specifications, any applicable methodologies, and operator judgment. All calibrations will be performed using standard industry practices or equipment manufacturer recommendations.

### 3.5 Decontamination of Field Equipment

Non-disposable soil sampling equipment will be decontaminated between each soil interval. Decontamination will consist of the following steps:

- Physically remove solids from sampling equipment with brush or paper towel
- Wash in clean tap water and phosphate-free detergent (e.g. Liquinox™)
- Rinse with tap water
- Rinse with deionized or distilled water
- Dry with a clean/new paper towel or allow to air dry
- Wrap equipment in either clean plastic or aluminum foil when not in use for a prolonged period.

### 3.6 Field Documentation

The integrity of each sample must be maintained throughout the field investigation, from the time of collection to the conclusion of data reporting. Proper recordkeeping will be implemented in the field so that sample custody may be traced from collection to final disposition. The logs, labels, and procedures presented below will be used to adequately identify sample information.

#### 3.6.1 Field Log Book

A bound field notebook with consecutively numbered pages will be completed for each sampling event. All daily field activities will be documented in indelible ink in this notebook. The field team leader will record at least the following information in the daily notebook:

- Date and time of entry (24-hour clock)
- Project name and location
- Project number
- Time and duration of daily sampling activities

- Weather conditions
- Sample identifier and analysis code for each sample to be submitted for laboratory analysis
- Global positioning system (GPS) coordinates for soil sample collection locations. For composite samples, coordinates for at least one grab area location will be collected and documented.
- Variations, if any, from specified sampling protocols and reasons for deviations
- Name of person making entries and other field personnel
- On-site visitors, if any
- Specific information on each type of sampling activity
- Comments and observations at time of sample collection (relevant factors that might influence sample integrity)
- Signature and date at bottom of logbook page completed at the conclusion of each day of activities

The field team leader is responsible for proper completion of all forms. Field logbook entries will be completed at the time observations are made. In addition, sample location maps will be updated during sampling and maintained throughout the sampling events. Sample identifications (IDs) will be created using the DuPont specified format: Site (three-letter code), followed by sample matrix code, followed by location code, followed by depth (applicable to soils and sediment samples only).

Sample IDs for soil and other matrix types will include additional information as to the depth at which the sample was collected. The sample ID will include a code for sample locations.

A complete description of the sample naming and identification procedure, along with matrix codes and instructions on completing chains of custody are included in the QAPP (Appendix B).

Copies of these field observations and records will be submitted to the project file at the conclusion of field activities. Field activities may be photo documented to provide visual information and verification of field data by project personnel. Photographs will be referenced appropriately in the field logbook.

### **3.6.2 Sample Labeling**

Each sample container will have a sample label affixed to the outside that includes the sample identification number, name of sampler(s), location sampled, date and time sampled, preservatives used, and parameter(s) to be analyzed. Information will be recorded on the sample label with indelible ink.

### **3.6.3 Sample Handling/Shipment**

Samples will be collected using the procedures detailed in the preceding sections of this FSP. Sample coolers and ice will be available to maintain the samples at a cool temperature (4°C, ±2°C) from the time of collection until the coolers arrive at the laboratory.

The custody of samples collected during a field investigation will be traceable at all times. The C-O-C form documents possession of the samples from the time of

collection until final disposition the sample. A sample is considered under custody if any of the following apply.

- It is in the possession of the investigator.
- It is in the view of the investigator after possession has been established.
- The investigator locks up the sample after possession.
- It is in a designated secure area.

The laboratory will provide all sample containers. Only new sample containers (i.e., industrial glassware or equivalent) will be used to collect samples. The appropriate size and type of container will be provided by the laboratory with the applicable preservatives. Sample containers purchased by the laboratory will be pre-cleaned by the vendor. Certificates of analysis that document cleanliness are available upon request to the laboratory for every lot of bottles purchased.

To the extent practical, sample labels will be prepared by the laboratory and shipped with the bottles. The laboratory will prepare pre-printed C-O-C forms for use by the field sampling teams. The pre-printed C-O-C forms and bottle labels will be delivered to the field location prior to sampling to allow samplers a final accuracy check. In addition, the laboratory will include extra blank labels and bottles that may be needed.

Sample containers will be kept closed and in a cooler or appropriate storage location until needed. As they are collected, samples will be labeled and recorded in the field notebook along with other pertinent collection data. Immediately after the sample containers have been filled and labeled, all sample containers will be placed on ice in a cooler or in a refrigerated storage unit at  $4^{\circ}\text{C}\pm 2^{\circ}\text{C}$ .

Soil samples will be shipped on ice ( $4^{\circ}\text{C}\pm 2^{\circ}\text{C}$ ) to the testing laboratories where they will be appropriately stored until analysis and final disposition. All field samples will be analyzed as soon as possible after receipt at the laboratory. The hazardous soil samples collected have a 48 hour turnaround. Non hazardous samples have a regular turnaround.

Samples in glass jars or bottles that are shipped or delivered by courier to the Site will be packed in bubble-wrap or foam plastic to prevent breakage. C-O-C forms will be enclosed in the coolers, and C-O-C seals will be placed across the cooler lids. A copy of the form, signed upon receipt at the laboratory, will be returned to the field team leader and placed in the project file.

Samples shipped from the Site to the laboratory by a commercial courier will be transported in an insulated shipping container sealed with tamper-evident tape or a tamper-evident custody seal. If any custody seal is received broken, that fact will be recorded on the C-O-C form upon receipt at the laboratory and project personnel will be notified.

### 3.6.4 Chain-of-Custody (C-O-C)

Each sample may consist of several individual sample aliquots contained in separate sample containers. Each sample container will be logged on the C-O-C form prior to shipment to the laboratory. The C-O-C form may be initiated at the laboratory when the sample containers are shipped to the field.

The following information will be recorded on the C-O-C form:

- Origin of sample containers

- Name of the collector
- Dates and times of sample collection
- Sample identification numbers
- Number of containers for each sample aliquot
- Container size
- Type of preservation (including ice)
- Analysis requested (analytes from each sample aliquot)
- Turn around time requested
- Special handling instructions
- Destination of samples
- Name, date, time, and signature of each individual possessing the samples
- Shipping container identification number

The C-O-C form will be signed by each individual responsible for custody of the sample containers and will accompany the samples to the laboratory. A sample C-O-C form is presented in the QAPP (Appendix B). All samples, including geotechnical samples, will have a C-O-C form prepared for shipment.

Custody of the samples will be defined as actual physical possession, in view after physical possession, or locked and/or sealed in a tamper-resistant container after physical possession. At the time of custody transfer, the individual relinquishing the samples will observe as the transferee inspects the samples for integrity, and dates and signs the C-O-C form. The original, signed C-O-C form (white copy) along with the carbon copy (canary copy) will accompany the samples to the laboratory. The canary copy will remain at the laboratory and the original C-O-C form will be sent to the project chemist with the data. The field team leader or designate will be responsible for custody of the samples taken during the field investigation.

#### ***Field Custody Procedures***

At the time of sample collection, the following field activities will be performed and documented by field sampling personnel:

- All procedures regarding preparation of reagents or supplies to be used in sample collection and/or sample preservation.
- Sample quantity, type (i.e., composite or grab), location, and depth will be documented in the field log.
- Sample labels will be prepared including sample identification numbers, time and date of collection, requested laboratory analyses, and name of sampler.

Samples collected in the field by a team of investigators will be the responsibility of each sampler until the samples are transferred to a person designated as the field sample custodian. C-O-C forms will not be required for samples analyzed in the field; however, custody procedures will be maintained at all times prior to analysis, and samples will be documented in field logs.

Prior to sample transport to the laboratory, a C-O-C form will be completed by the field sample custodian. Sample locations, sample identification numbers, description of samples, number of samples collected, and specific laboratory analyses to be conducted on each sample will be recorded on a C-O-C form. The field sample custodian will sign and date the C-O-C form and retain a copy for the project records.

Prior to sample delivery to a courier, the sample shipping carton (e.g., cooler, box) will be sealed with the signed C-O-C forms inside. The authorized laboratory custodian who receives the samples will sign the C-O-C forms, thus terminating custody of the field sample custodian.

### **Laboratory Custody Procedures**

Sample custody at the analytical laboratory is maintained through systematic sample control procedures, including the following:

- Sample receipt
- Sample log-in
- Sample storage
- Sample archival or disposal

The laboratory C-O-C procedures are documented in the QA plan for the laboratory, which is provided as an attachment to the QAPP (Appendix B).

### **3.6.5 Quality Assurance/Quality Control (QA/QC)**

QA/QC procedures will be performed to ensure that the data collected is both valid and representative of the site conditions. Sufficient sample volume will be collected to meet the QA/QC requirements specified in the QAPP (matrix spike/matrix spike duplicates, duplicates, field blanks and equipment blanks). QA/QC samples will be collected at the frequency noted below.

### **3.6.6 QC Sample Procedures**

Field forms, sample logs, and field notebooks will be used to ensure that proper documentation of field activities occur. Chain of custody (COC) procedures will be strictly followed, and samples will be collected and preserved in the proper manner. Field instruments will be calibrated / standardized in accordance with instrument manufacturer's procedural manuals. Assessment of field sampling precision and bias will be made by collecting field duplicates, matrix spike/matrix spike duplicate (MS/MSD) samples, and equipment blanks for laboratory analysis. The definitions and the frequency for each QC sample type are discussed below.

The following QC samples will be collected in the field and analyzed by the laboratory with original samples.

- Field Duplicates – 5 percent of the total number of samples will be collected as duplicates and analyzed to assess the variability of chemical concentrations in sample matrices/locations. Field duplicates provide a measure of the total analytical bias (field and laboratory variance); including bias resulting from the heterogeneity of the replicate sample set itself.
- Equipment Blanks - Equipment blanks will be collected to help identify possible contamination from the sampling environment or from the sampling equipment

(e.g., grab, bowls, spoons). Equipment blank samples will be collected by passing deionized or distilled water over clean, non-dedicated sampling equipment. At least one equipment blank sample will be collected for each type of sample being collected under this sampling plan.

### 3.7 Laboratory Checks

Periodic audits of the analytical laboratory may be performed by the project QA/QC officer (or the designated individual) to assess if proper analytical protocols are being followed concerning sample analysis and laboratory QC checks.

### 3.8 Field Checks

Selected field activities performed to conduct QA/QC checks include the following:

- Using standardized data collection formats
- Calibrating field equipment
- Collecting duplicate samples and field blanks
- Conducting field audits

Field equipment will be calibrated prior to use in accordance with the standardized procedures contained in the equipment manual. Field and laboratory audits may be performed by the QA/QC officer (or the designated individual) to evaluate if proper protocols and procedures are being employed.

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## 4.0 ANALYTICAL TESTING PROGRAM

Chemical testing will be completed for soil samples to be collected during this investigation. Specific details regarding sampling locations and analyses to be performed for specific samples are discussed in Section 2. Analyses performed for this investigation will be conducted in accordance with EPA guidance documents, Test Methods for Evaluating Solid Waste, Physical and Chemical Methods SW-846, Revision 5 (EPA 1998a). The analytical test methods to be employed for given parameters in each sample media are summarized below. Test America located in Chicago will be analyzing the soil samples. Bureau Veritas located in Novi, Michigan will be performing the air filter analyses.

### 4.1 Soil Sample Analytical Methods

Confirmation soil samples collected from the potentially hazardous areas will be analyzed for lead, arsenic and cadmium. All of the other soil samples will be analyzed for lead, arsenic, cadmium, and zinc.

### 4.2 Air Monitoring

For activities that may generate dust, an action level of 2.5 mg/m<sup>3</sup> has been established and monitoring will be conducted to quantify the airborne concentrations of lead, arsenic, and cadmium. Air quality monitoring will include work area sampling to determine site concentration levels of airborne particulate and target metals, periodic real-time monitoring (or work space monitoring) for dust levels that will aid in decision-making for implementing dust control measures, and construction worker monitoring. In addition, meteorological data will be continuously recorded from the start to the end of the remediation work using an on-site meteorological monitoring station located in a central area of the Site. For additional specifications, see the Air Monitoring Plan included in the HASP provided in a separate cover.

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## 5.0 WASTE MANAGEMENT

This project includes generation of large amounts of pre-sampled soil. Based on presampling analytical, generated waste soils are either potentially non hazardous soil or potentially hazardous soil. The project scope (with confirmation from EPA based on discussions with project team) allows for segregation and stock piling of this soil in a predetermined "Soil Storage Area." Most of the East Chicago site is considered an AOC; therefore, RCRA AOC consolidation and staging regulations apply (i.e., LDR requirements are not applicable on generated material). See the Waste Management Plan included as Appendix A of this document.

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## 6.0 REFERENCES

EPA April 1998. Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Revision 5. Parsons August 2012. Technical Memorandum, Buffer Zone Excavation and Management, Dupont East Chicago Site, East Chicago, Indiana.

URS September 2012. Project-Specific Waste Management Plan For Interim Remedial Measures – Stormwater Runoff.

Parsons June 2012. Health and Safety Plan for DuPont East Chicago Interim Remedial Action – Excavation.

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**FIGURES**

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PRB WALL

SOLID WASTE LANDFILL

Natural Area



0 100 200 300 Feet

- |                               |   |                                  |   |
|-------------------------------|---|----------------------------------|---|
| Basemap                       | Solid Waste Landfill                      | Target Remediation Area          | <b>Excavation Area Sampling Location</b><br>< TCLP Threshold Values for As, Cd, and Pb outside IRM's<br>Post Excavation IRM Sampling Location<br>Additional Post Excavation IRM Sampling Location |
| Existing Fence Line           | Proposed Approximate Realignment of Fence | Redevelopment Area               |   |
| River                         | PRB Wall Location (approximate)           | Sampling Area                    |   |
| Approximate Property Boundary | Buffer Zone                               | Sensitive Habitat- No excavation |   |

**PARSONS**  
Parsons Commercial Technology Group  
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Chicago, IL



Title: **POST EXCAVATION SAMPLE LOCATIONS**  
Revised Supplemental Corrective Measures Study Investigation  
DuPont East Chicago Facility  
East Chicago, Indiana

Prepared by: Muyiwa Sami  
Date: 8/27/2012  
DuPont Project No: 507942

Reviewed by: Figure No: 1  
PARSONS Project No: 446650

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**APPENDIX A  
WASTE MANAGEMENT PLAN**

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# Project-Specific Waste Management Plan For Interim Remedial Measures – Stormwater Runoff

DuPont East Chicago  
East Chicago, Indiana

Date: September 2012

Contractor Job Number: 18986193.507754  
DuPont Job Number: 507754



URS Corporation  
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### Appendices

Appendix A	Waste Management Field Documentation Form
Appendix B	Waste Container and Equipment Log Tracking Sheet
Appendix C	Waste Container Labels
Appendix D	90/180-Day - Accumulation Area Inspection Log

## **1.0 Purpose and Site Information**

### **1.1 Purpose**

The very nature of environmental remediation lends itself to the generation of solid waste, hazardous waste, and investigation derived waste. This plan will outline general site waste generation information, classification justification, and storage and disposal procedures for project generated waste. This plan will be used by field teams associated with the DuPont Corporate Remediation Group (CRG).

### **1.2 Hazardous Waste Generator Status**

The DuPont East Chicago site is considered a Conditionally Exempt Small Quantity Generator (CESQG) of Resource Conservation and Recovery Act (RCRA) hazardous waste. However, if more than 2,200 pounds (approximately three full drums of contaminated soil) of hazardous waste are generated in a month, the generator status will change to Large Quantity Generator (LQG). Therefore, given the potential for the generation of up to five drums of contaminated soil during the project scope of work, this plan will include the requirements of both classes of generators. The facility's U.S. Environmental Protection Agency (EPA) generator identification number is IND005174354.

### **1.3 Hazardous Waste Generator Requirements**

#### **1.3.1 Large Quantity Generator (LQG)**

As a LQG, the following general hazardous waste generator requirements are applicable for the DuPont East Chicago site along with any applicable site procedures:

- EPA/State must be notified of any hazardous waste activity.
- Hazardous waste on-site is allowed to accumulate no longer than 90 days.
- There is no limit on the quantity of hazardous waste that can be accumulated on-site.
- Accumulation start date must appear on each waste container.
- As necessary, the words "Hazardous Waste" are required on each container.
- The container storage location must be at least 50 feet from property line.
- Hazardous waste treatment is allowed in accumulation units.
- A manifest must be used to ship hazardous waste off-site.
- Hazardous waste must be shipped using transporters and facilities that have EPA ID numbers.

- The site must prepare land disposal restriction form (LDR) notifications/certifications.
- The site must conduct personnel training.
- The site must have a preparedness and prevention plan on file at the site.
- The site must have a contingency plan that outlines site emergency procedures on file with local emergency responders.
- The site must prepare and file on-site all hazardous waste records.

### **1.3.2 Conditionally Exempt Small Quantity Generator (CESQG)**

As a CESQG, the following general hazardous waste generator requirements are applicable for the DuPont East Chicago site along with any applicable site procedures.

- EPA/State must be notified of any hazardous waste activity.
- There is no limit to the on-site accumulation time for hazardous waste.
- Less than 1,000 kg of hazardous waste, 1 kg of acute hazardous waste, or 100 kg residue or contaminated soil from the cleanup of acute hazardous waste spill can be accumulated on-site.
- Accumulation start date must appear on each waste container.
- As necessary, the words “Hazardous Waste” are required on each container.
- The container storage location must be at least 50 feet from property line.
- Hazardous waste treatment is allowed in accumulation units.
- A manifest must be used to ship hazardous waste off-site.
- Hazardous waste must be shipped using transporters and facilities that have EPA ID numbers.
- The site must prepare LDR notifications/certifications.
- The site must conduct personnel training.
- The site must prepare and file on-site all hazardous waste records.

## 2.0 Scope of Work

This project-specific waste management plan (PSWMP) will document the planning for the Interim Remedial Measures (IRM) Design to control stormwater run-off for the DuPont East Chicago site located in East Chicago, Indiana.

The following scope of activities to be conducted by Parsons or by its designated subcontractor(s):

- Where applicable (uplands vs. wetlands and high quality habitat), excavate 2 feet of soil from target remedial zones.
- Where applicable, back fill and grade the target remedial zones.
- Install semi-permanent silt fence and/or drainage pipes/swales.

### Project Team Responsibilities

Task	Organization	Individual
Conduct waste coordinator duties.	Parsons	K. Thompson or Designee
Coordinate sampling activities.	Parsons	K. Thompson or Designee
Oversee waste management activities.	URS	S. Poole
Label containers.	Parsons	K. Thompson or Designee
Move waste into the waste accumulation area.	Parsons	K. Thompson or Designee
Complete/submit Waste Management Field Documentation Form to the Waste Management Network.	Parsons	K. Thompson or Designee
Provide characterization testing bottles and final analyses reports.	URS	S. Poole
Review analytical data to determine RCRA classification.	URS	S. Poole
Inspect RCRA Hazardous and HAZARDOUS WASTE - PENDING ANALYSIS wastes weekly.	Parsons	K. Thompson or Designee
Label waste containers for shipment.	Parsons	K. Thompson or Designee
Prepare shipping papers (i.e., manifests and LDR forms).	URS	S. Poole
Notify project team [Project Director (PD) and Project Manager (PM)] of waste disposal completion of activities.	URS	S. Poole
Prepare/submit related reporting.	URS	S. Poole
Archive and maintain all required documents.	DuPont	S. Yalvigi

### **3.0 Generator Waste Classification**

Potential waste soil from this project has been pre-sampled to determine constituents of concern and applicable levels for waste classification and possible disposal options.

In general, large amounts of soil and water will be generated for either on-site stock piling or off-site waste disposal. Generated waste will only be classified based on its hazardous characteristics. Federal listed waste codes will not apply because the origin of the constituents of concern is unknown or is not associated with specific production waste.

Specified stockpiled soil and decontamination water will be managed as Hazardous Waste “Pending Analysis” upon generation. Once generated, waste analysis samples will be collected to properly classify waste material. Once classified, disposal or stockpile options will be determined.

General debris (as identified in the field) will be classified as Non Hazardous waste upon generation.

## 4.0 Waste Management Procedures

### 4.1 Project Waste

This project includes generation of large amounts of pre-sampled soil. Based on pre-sampling analytical, generated waste soil falls into two potential waste categories:

- Potentially Non Hazardous soil
- Potentially Hazardous waste soil

The project scope (with confirmation from EPA based on discussions with project team) allows for segregation and stock piling of this soil in a predetermined “Soil Storage Area.” As identified in Figure 2, most of the East Chicago site is considered an AOC; therefore, RCRA AOC consolidation and staging regulations apply (i.e., LDR requirements are not applicable on generated material).

In addition, the stockpiles will be placed in a location where potential impact to underlying materials is minimized. These stockpiles will be covered and surrounded by silt fencing to control stormwater runoff from the pile during rainfall events. The stockpiles will be inspected at the close of each working day to make sure they are covered.

Currently, the project team has not determined final use or disposal of stockpiles; therefore, ultimate disposition is to be determined.

Additionally, the following waste streams and correlating storage, classification, and labeling requirements are identified below.

### Anticipated Waste Steams

Waste Stream	Proposed RCRA Classification	Anticipated Waste Characterization Testing	Container Requirements	Labeling Requirements	Anticipated Disposal Method
Identified NON HAZARDOUS Soil	Non Hazardous	RCRA TCLP Metals	None – On-Site Stockpile “Soil Storage Area”	Hazardous Waste Pending Analysis: TBD	TBD
Identified HAZARDOUS Soil	Hazardous Waste: TBD	RCRA TCLP Metals	None – On-Site Stockpile “Soil Storage Area”	Hazardous Waste Pending Analysis: TBD	TBD
Decontamination Water	Non Hazardous	None	Tank or Tanker Truck	Non Hazardous Wastewater	Off-Site
General Debris (PPE)	Non Hazardous	None	55-Gallon Drums or On-Site Dumpsters	Non Hazardous Waste	Off-Site

## 4.2 Waste Inventory Documentation

At the conclusion of the field event, the following documentation needs to be forwarded to the URS Waste Management Group (as necessary).

- Waste Management Field Documentation Form (see Appendix A).
- Waste Container and Equipment Log (see Appendix B)

## 4.3 Container Labeling Instructions

Example labels for the waste streams are included in Appendix C. Label information will be completed in a permanent marker.

## 4.4 Container Storage Time Limits and Inspection Requirements

Waste containers or stockpiles may be stored in a designated waste accumulation area until characterization is completed and may remain in this area until shipment.

Below identifies general waste storage-time limits.

Waste Type	Generator Status	Storage Time Limit	Inspection Requirement
Non-Hazardous	Not Applicable	1 Year	Initial Inventory, and as added
RCRA Hazardous	Conditionally Exempt Small Quantity Generator	NA	Inventory weekly
RCRA Hazardous	Large Quantity Generator	90 Days	Inventory and inspect weekly

The accumulation start date is the date waste was first placed in the storage container or stockpiled (e.g., drum roll-off box or tank).

An Accumulation Area Inspection Log for waste is included in Appendix D.

## 5.0 Response and Reporting Requirements

The requirements of this section must be carried out immediately whenever there is a fire, an explosion, or a hazardous substance spill that could threaten human health or the environment.

### 5.1 Internal DuPont Contacts

Should a release occur of any hazardous substance onto the ground, surface water, or air, it should be appropriately reported to Randy Palachek (Project Manager). Agency reporting may be required based on the compound released, quantity, and media affected.

In the event that any spill occurs, the following internal contacts will be made.

Name	Location	Telephone
Drew McGowan (DuPont Site Representative)	Cleveland, OH	513.552.7019
Randy Palachek (Parson Project Manager)	Cleveland, OH	512.719.6006
*Sathya Yalvigi (DuPont CRG Project Director)	Barley Mill Wilmington, DE	302.999.2764

\* As necessary, **Sathya Yalvigi** will make the appropriate reporting within the CRG organization.

### 5.2 Reporting Requirements

The table below identifies specific chemicals of concern at the site and used during these activities along with their reporting quantities which may require agency reporting if released to the environment.

## Reportable Quantities (RQ) for Anticipated Constituents

Constituent	RQ (pounds)*	Regulation	Comments
Arsenic	10	40 CFR 302 CERCLA	Based on previous groundwater testing, it is not expected that the RQ would be exceeded in the event a spill occurs.
Corrosivity	100	40 CFR 302 CERCLA	Excess groundwater containerized in a 55 gallon drum due to the pH will contain enough material to trigger the RQ if a release occurs.
Petroleum products (fuels, hydraulic fluids)	Cannot cause a sheen on the surface of the water  Cannot violate applicable water quality standards  Cannot cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shoreline spills of hazardous substances or extremely hazardous substances when the amount spilled exceeds 100 pounds or the reportable quantity, whichever is less; spills of petroleum when the amount spilled exceeds 55 gallons	Indiana Spill Rule 327 IAC 2-6	

**Note:** The reportable quantity (pounds or gallons) cited refers to amount of pure chemical. Use the concentrations detected in the spilled matrix to determine if spill exceeds the reportable quantity. [50FR 13472, April 4, 1985: "If an 'unlisted ICRE {ignitable, corrosive, reactive, and/or EP toxicity} waste' is analyzed and the concentrations of all of its hazardous components are identified, the waste is no longer an unlisted waste, but one characterized by its components. The specific substances present will then determine the applicable RQ in accordance with the Clean Water Act mixture rule."]. For example, if the concentrations of chromium (RQ of 5,000 pounds) and lead (RQ of 10 pounds) in soil are 10% and 1% respectively, the reportable quantity would be the **lesser** of 50,000 pounds (chromium) and 1,000 pounds (lead), or 1,000 pounds of soil.

Specifically excluded under Indiana Spill Rule 327 IAC 2-6 is the following: Spills of integral operating fluids, in the use of motor vehicles or other equipment, the total volume of which is less than or equal to fifty-five (55) gallons and which do not damage waters of the state.

### 5.3 Agency Spill Reporting Requirements and Contacts

If a release exceeds the quantity cited above, the release must be reported to the appropriate federal and/or state agency.

Federal reporting requirements for releases of hazardous substances to the environment are stipulated by the following regulations:

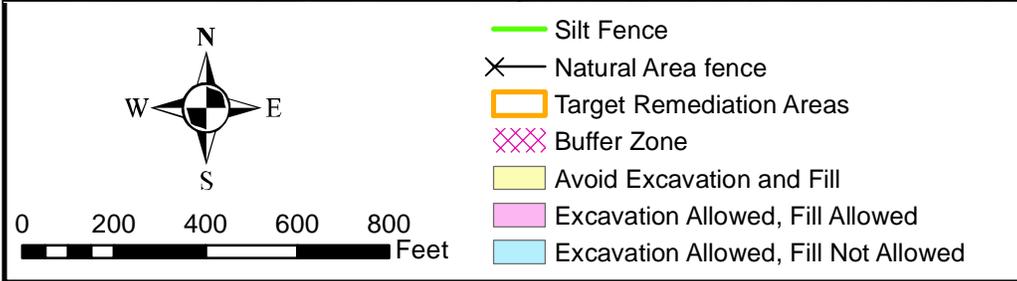
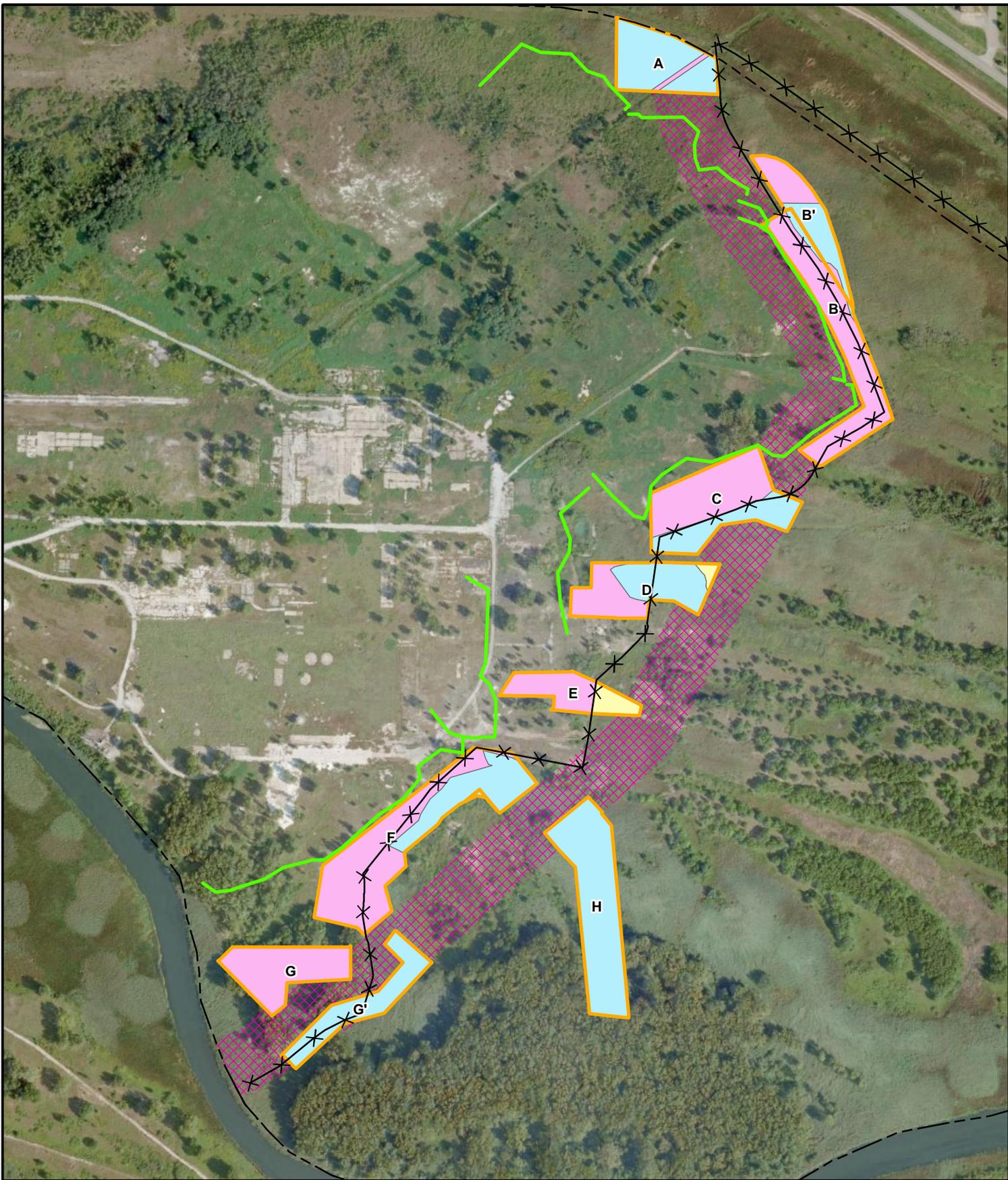
- Clean Air Act (CAA)/National Emissions Standards for Hazardous Air Pollutants (NESHAPS)
- Clean Water Act (CWA)
- RCRA
- Comprehensive Environmental Release Compensation and Liability Act (CERCLA)
- Emergency Planning and Community Right-to-Know Act (EPCRA).

In addition to federal reporting requirements, state spill and/or release reporting requirements may stipulate more stringent reporting thresholds than federal requirements. The Indiana rules that pertain to spill and/or release reporting require immediate reporting of any release that exceed the reportable quantities cited in Reportable Quantity table above or any releases that contact surface-water bodies of the state. If reporting is necessary, the following agencies shall be notified by **the DuPont Project Director, Sathya Yalvigi**.

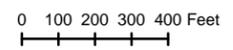
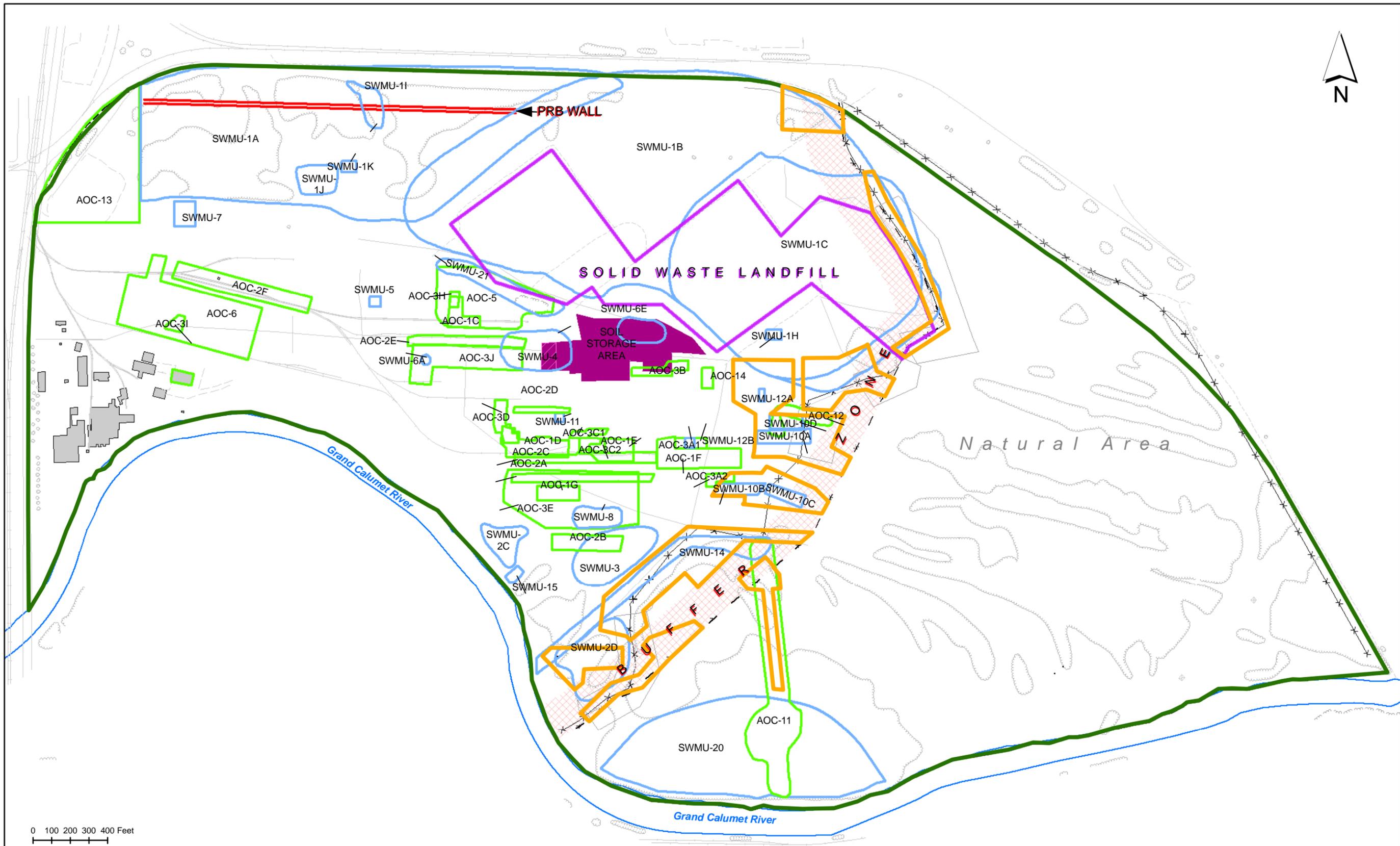
#### Emergency Response and Agency Contacts for Spill Reporting

Name	Telephone
U.S. EPA- National Response Center	800.424.8802
Lake County Local Emergency Planning Commission (LEPC)	219.756.8302
Indiana Department of Environmental Management 24-Hour Reporting Number	888.233.7745 Out of State 317.233.7745 In state

## Figures



**Figure 1**  
 IRM Preliminary  
 Silt Fence Location  
 Dupont East Chicago  
**PARSONS**



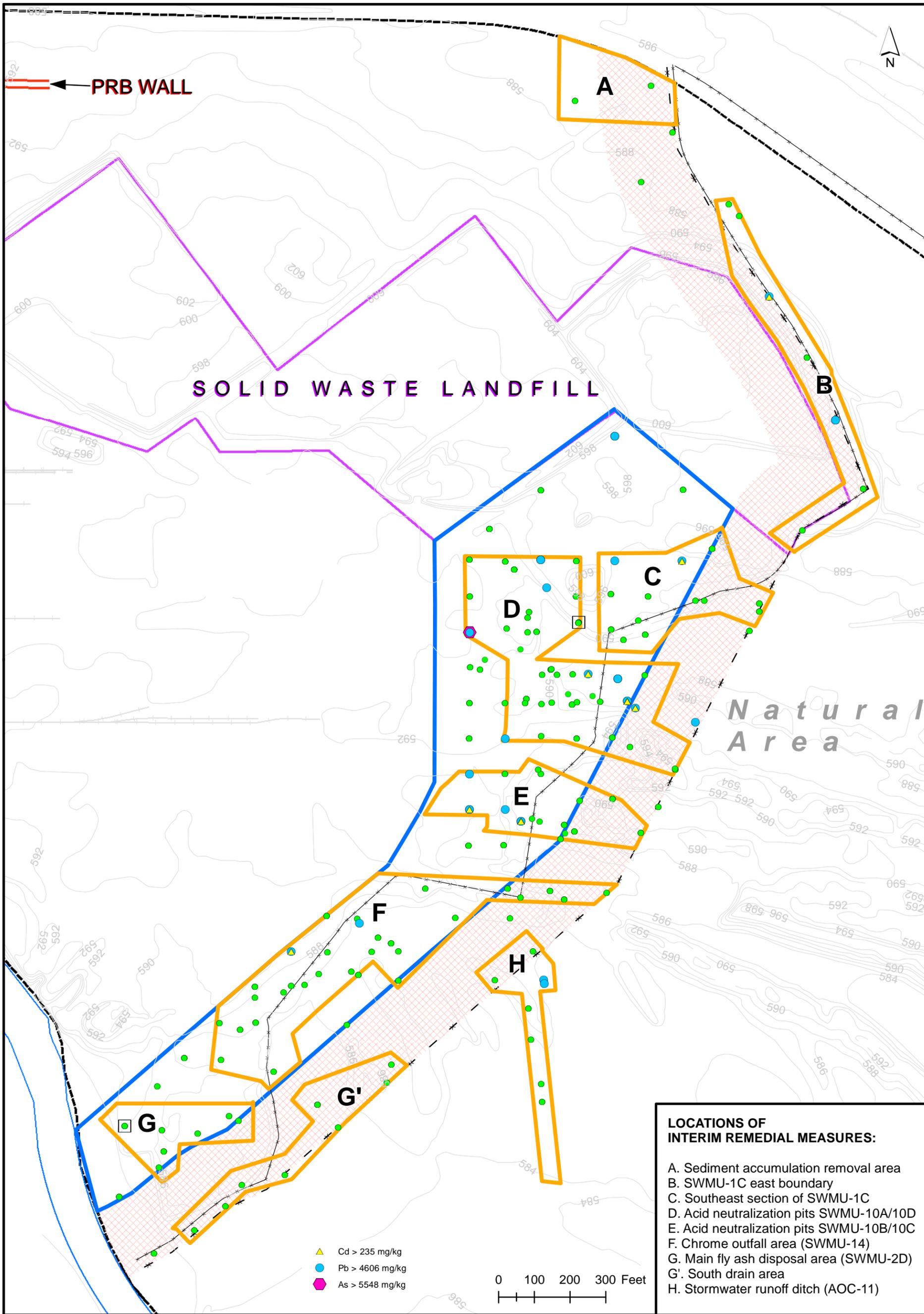
Note: Topographic data from previous study conducted prior to 2009.



**Title: Overall Property AOC**  
 Revised Supplemental Corrective Measures Study Investigation  
 DuPont East Chicago Facility  
 East Chicago, Indiana

- Basemap
- Existing Fence Line
- River
- Approximate Property Boundary
- Site Structure
- Solid Waste Landfill
- Proposed Realigned Fence
- AOC Boundary
- SWMU Boundary
- Overall Property AOC
- Soil Storage Area
- Hazardous Soil Stockpile Area

Prepared by: Erich Kutschke	Date: 06/12/2012	DuPont Project No: 507754
Reviewed by:	Figure No: 1	PARSONS Project No: 446702



- LOCATIONS OF INTERIM REMEDIAL MEASURES:**
- A. Sediment accumulation removal area
  - B. SWMU-1C east boundary
  - C. Southeast section of SWMU-1C
  - D. Acid neutralization pits SWMU-10A/10D
  - E. Acid neutralization pits SWMU-10B/10C
  - F. Chrome outfall area (SWMU-14)
  - G. Main fly ash disposal area (SWMU-2D)
  - G'. South drain area
  - H. Stormwater runoff ditch (AOC-11)

Basemap	Solid Waste Landfill	Target Remediation Area
Existing Fence Line	Proposed Approximate Realignment of Fence	Surveyed Contours- prior to 2009
River	PRB Wall Location (approximate)	Redevelopment Area
Approximate Property Boundary	Buffer Zone	
Site Structure		

**Excavation Area Sampling Location**

- < TCLP Threshold Values for As, Cd, and Pb
- Samples approaching TCLP threshold for lead

**PARSONS**  
Parsons Commercial Technology Group  
10 S. Riverside Plaza  
Chicago, IL

**Title: HISTORICAL SURFACE SOIL SAMPLES COLLECTED FROM IRM SITES AND ADJACENT AREA**

Revised Supplemental Corrective Measures Study Investigation  
DuPont East Chicago Facility  
East Chicago, Indiana

Prepared by: Erich Kutschke	Date: 6/12/2012	DuPont Project No: 507942
Reviewed by:	Figure No: 1	PARSONS Project No: 446650
NOTE:		

## **Appendices**

## Waste Management Field Documentation Form

The DuPont Site Representative (DSR) is to submit this form to the URS Waste Management Network Consultant via electronic mail at the completion of the project. The designated Waste Management Consultant(s) for this project are:

WM Name: Scott Poole Email: [Scott.Poole@urs.com](mailto:Scott.Poole@urs.com) Phone: 302.781.5940

### General Information

Field Event Date(s): \_\_\_\_\_

CRG Project No. 507873 Project Manager: Drew McGowan

Site Name: East Chicago Project Name: Interim Remedial Measures

Site Address: 5215 Kennedy Avenue, East Chicago, IN 46312

DSR: TBD Phone: \_\_\_\_\_

Site Environmental Coordinator/Contact: NA Phone: \_\_\_\_\_

### Waste Information

1. Does this project need help from your URS WM Consultant to dispose of waste from this project?

X YES (Complete the attached waste inventory sheet)

\_\_\_\_\_ NO (Answer questions 2 and 3 below)

2. Who will be responsible for disposal of the waste?

\_\_\_\_\_

3. How was the waste disposed?

\_\_\_\_\_

\_\_\_\_\_



### Waste Container and Equipment Log Tracking Sheet

<b>Equipment (Tanker Truck, Roll- Off, Dump Truck, Baker Tank®)</b>	<b>Vendor</b>	<b>Delivery Date</b>	<b>Pickup Date</b>	<b>Container Volume</b>	<b>Final Destination</b>

# NON- HAZARDOUS

# Waste

## OPTIONAL INFORMATION

**SHIPPER** DuPont: E. Chicago

**ADDRESS** 5215 Kennedy Ave

**CITY, STATE, ZIP** E. Chicago, IN 46312

**CONTENTS** TBD

**NON-HAZARDOUS WASTE**

# Hazardous Waste Pending Analysis

**LOCATION:** DuPont E. Chicago

**ACCUM. DATE:** TBD

**SAMPLE DATE:** TBD

**MU-62395**

# HAZARDOUS WASTE

FEDERAL AND/OR STATE LAWS PROHIBIT IMPROPER DISPOSAL.

IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY  
AUTHORITY, THE U.S. ENVIRONMENTAL PROTECTION AGENCY.

GENERATOR INFORMATION:

**Name:** DuPont East Chicago  
**Address:** 5215 Kennedy Avenue **Phone:** \_\_\_\_\_  
**City:** East Chicago **State:** IN **ZIP:** 46312

EPA ID NO./  
MANIFEST DOCUMENT NO.: IND005174354 /

**ACCUMULATION** **EPA**  
**START DATE:** {Date} **WASTE NO.:** D002, D004

NA 3077, Hazardous Waste, Solid, N.O.S. (Arsenic), 9, PG III
D.O.T PROPER SHIPPING NAME AND UN OR NA NO. WITH PREFIX

## HANDLE WITH CARE!

### Accumulation Area Inspection Log (Completed Weekly when Hazardous Waste Exists on the Storage Pad)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Inspector Name: \_\_\_\_\_

Requirements	Meets Requirements (Yes or No)	Changes Needed	Date Corrected
Each container (as applicable) labeled with words "Hazardous Waste."			
Each container (as applicable) has "Accumulation Start Date."			
Each container has applicable waste code.			
Container labels legible.			
Containers tightly closed.			
No evidence of rust, dents, etc on drums.			
No containers leaking.			
Aisle space is open and free of obstructions.			
Storage is less than 180 days (SQG).			
Waste (hazardous and non-hazardous) is segregated properly.			
'No Smoking Sign' is clearly visible.			
Spill kit and materials are present and in good condition.			
No strange smells are noted.			
Communication or warning devices are present and working properly.			

Comments \_\_\_\_\_

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**APPENDIX B  
QAPP**

DRAFT

DRAFT

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**APPENDIX B**

**QUALITY ASSURANCE PROJECT PLAN**

**REVISED SUPPLEMENTAL CORRECTIVE  
MEASURES STUDY INVESTIGATION**

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**DUPONT EAST CHICAGO SITE  
EAST CHICAGO, INDIANA**

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PREPARED FOR:

**DuPont Corporate Remediation Group**

**Chestnut Run Plaza 715/230**

**4417 Lancaster Pike**

**Wilmington, Delaware 19805**

September 22, 2009

PREPARED BY:

**PARSONS**

**10 SOUTH RIVERSIDE PLAZA, SUITE 400  
CHICAGO, ILLINOIS 60606**

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Appendix A Laboratory SOPs

Appendix B Analytical Data EDD Format Specification

## **ATTACHMENTS**

Attachment 1 DuPont Standard Operating Procedure for Completing Chain-of-Custody Forms

## LIST OF ACRONYMS AND ABBREVIATIONS

°C	degree Celsius
%D	percent difference or percent drift
%R	percent recovery
ADQM	Analytical Data Quality Management
AES	atomic emission spectrometer
AOC	area of concern
ASTM	American Society for Testing Materials
CLP	Contract Laboratory Program
C-O-C	chain of custody
CPRG	closure plan review guidance
CRG	Corporate Remediation Group
CSM	conceptual site model
DDR	DuPont in-house data review process
DQO	data quality objective
EBS	environmental baseline survey
FP	false-positive
GCN	generic cleanup number
HASP	health and safety plan
ICP	inductively coupled plasma
IDEM	Indiana Department of Environmental Management
IDW	investigation-derived waste
LCS	laboratory control sample
L.P.	limited partnership
MCL	maximum contaminant level
MDL	method detection limit
MS/MSD	matrix spike / matrix spike duplicate
PARCC	precision, accuracy, representativeness, completeness, and comparability
PE	performance evaluation
PM	Project Manager
PQL	practical quantitation limit
PR/VSI	preliminary review and visual site inspection
QA	quality assurance
QA/QC	quality assurance and quality control
QAPP	quality assurance project plan
QC	quality control
r	correlation coefficient
RCRA	Resource Conservation and Recovery Act
RFI	RCRA facility investigation
RPD	relative percent difference
RSD	relative standard deviation
SOP	standard operating procedure
SP	sampling plan
U.S.	United States
USEPA	U.S. Environmental Protection Agency

## 1.0 INTRODUCTION

This quality assurance project plan (QAPP) presents the policies, project organization, functional activities, and quality assurance and quality control (QA/QC) measures intended to achieve the project data quality objectives (DQOs) for sampling activities as presented in Appendix A – Sampling Plan (“Sampling Plan”) to the Proposed Revised Supplemental Corrective Measures Study (CMS) Work Plan (“Work Plan”) for the DuPont East Chicago Site (“Site”) in East Chicago, Indiana. The objective of this QAPP is to meet the requirements for conducting the field and laboratory work in accordance with QA/QC procedural protocols for collection and analyses of environmental data.

This QAPP has been prepared in accordance with the following guidance documents:

- RCRA QAPP Instructions, United States (U.S.) Environmental Protection Agency (USEPA) Region 5, Revision: April 1998;
- EPA Guidance for Quality Assurance Project Plans, USEPA QA/G-5 (EPA/240/R02/009, December 2002); and
- RISC Technical Guide, January 31, 2006, Appendix 1 (Revised May 1, 2009) Indiana Department of Environmental Management (IDEM).

Consistent with the above guidance documents, the QAPP contains the following essential elements:

- Project Description (Section 2)
- Project Organization and Responsibility (Section 3)
- Quality Objectives and Criteria for Measurement Data (Section 4)
- Sampling Procedures (Section 5)
- Custody Procedures (Section 6)
- Calibration Procedures and Frequency (Section 7)
- Analytical Procedures (Section 8)
- Internal Quality Control Checks (Section 9)
- Data Reduction, Reporting, and Validation (Section 10)
- Performance and System Audits (Section 11)
- Preventive Maintenance (Section 12)
- Specific Routine Procedures used to Assess Data Precision, Accuracy, and Completeness (Section 13)

- Corrective Action (Section 14)
- Quality Assurance Reports to Management (Section 15)

## **2.0 PROJECT DESCRIPTION**

### **2.1 Site Description and History**

The Site is located at 5215 Kennedy Avenue, East Chicago, in Lake County, Indiana (Figures 2.1 and 2.2 of the Work Plan). The site is bounded on the north by the Riley Park residential area and various commercial properties, on the south by the East Branch of the Grand Calumet River, on the east by commercial properties (including the City of East Chicago Solid Waste Transfer Station) and the DuPont Natural Area that is maintained by the Nature Conservancy, and on the west by Kennedy Avenue and the former USS Lead Refinery.

Additional discussion of the site topography, geological/hydrogeological characteristics, and site use history are presented in Section 2.0 of the Work Plan.

### **2.2 Previous Data Collection/Sampling Activities**

Numerous historical investigations have been conducted at the site, which are discussed in Section 1.0 of the Work Plan.

### **2.3 CMS Investigation Approach and Schedule**

The objective of this supplemental investigation is to collect additional soil and groundwater data to assist in the remedial design to address contaminated soil and groundwater on portions of the Site. These objectives are discussed in Sections 1.0 and 3.0 of the Work Plan. The activities proposed to meet these objectives include the following:

- Delineate constituent concentrations mainly in surface soils within areas proposed for a human health interim remedial measure (IRM);
- Assess constituent concentrations in surface soils to support a refined ecological risk assessment;
- Assess constituent concentration in vadose zone soils;
- Assess potential groundwater source areas for impact to groundwater; and
- Obtain groundwater data for use in the design of groundwater remedies.

The proposed assessment activities are described in the Section 3.0 of the Sampling Plan and include the following:

- Collection of soil samples; and
- Collection of groundwater samples.

## **3.0 PROJECT ORGANIZATION AND RESPONSIBILITY**

### **3.1 Project Organization**

The project organization chart is shown in Figure 1, and the key project team members and associated responsibilities are described below (Section 3.2).

The PM will be the focal point for all project communication and problem resolution. Issues related to field sampling and on-site activities will be relayed to the PM via the project geologist/geotechnical engineer/environmental engineer. Issues concerning the laboratory analysis of project samples or data quality will be transmitted to the PM by the DuPont CRG project chemist. It will be the responsibility of the PM to keep the Project Director informed of any issues involving scope, budget, or significant technical concerns. The health and safety officer will be immediately advised of any concerns, occurrences, or issues involving personnel safety and welfare.

### **3.2 Project Personnel and Responsibilities**

#### **3.2.1 Project Management**

The **DuPont CRG Project Director, Sathya Yalvigi**, is responsible for the execution of the overall project, including correspondence with and coordinating activities with the Indiana Department of Environmental Management.

The **Parsons PM, Douglas Groux**, will manage personnel involved in the project and will be responsible for cost and schedule tracking. The PM will also manage the preparation of all project deliverables.

Internal project team meetings will be initiated by the PM as necessary prior to the implementation of field activities. The internal meetings will include the appropriate team members referenced above, and will be conducted to review the project's specific tasks and responsibilities. Health and safety procedures and waste management procedures will also be reviewed at these meetings.

#### **3.2.2 Technical Direction**

**Satya Varadhi, as a Technical Director (TD)**, is responsible for providing technical direction to the project team during the entire project execution work. TD is responsible for providing guidance in preparation/development of project-required documents, e.g., sampling plan, work plans, remedial alternative analysis, CMS, etc. TD will also coordinate field and laboratory activities.

#### **3.2.3 Quality Assurance**

The **Parsons Project Chemist, Richard Cheatham**, will be responsible for developing and assisting the Parsons PM with the implementation of the QAPP and assisting in day-to-day quality assurance (QA) activities. In addition, the Project Chemist will be in contact with the analytical laboratory regarding the QA issues and will review the analytical data for QA purposes..

The **DuPont CRG Project Chemist, Sharon Nordstrom**, will be responsible for assisting in day-to-day QA activities; and coordinating subcontract laboratory analysis. In addition, the DuPont CRG project chemist will review analytical data generated for the project and coordinate independent data validation.

The **Parsons Health and Safety Manager, Austin Anderson**, will be responsible for developing and implementing the project health and safety plan (HASP) and ensuring that the plan is consistent with all applicable state and federal regulations.

The **DuPont CRG Waste Management Officer, Scott Poole**, will be responsible for developing the project waste management plan.

**USEPA-Region V** has the responsibility to review and approve the QAPP prepared for the project. Additional responsibilities may include the review and evaluation of the proposed field and laboratory analytical procedures and coordination of any external audits of the project laboratories and/or field sampling programs.

### **3.2.4 Laboratory Work**

The contract analytical laboratory to be used for off-site chemical analysis of project groundwater and soil samples is **TestAmerica, North Canton, Ohio**. The laboratory contact information is as follows:

TestAmerica North Canton Laboratory  
4101 Shuffel Street NW  
North Canton, Ohio 44729-6935  
Tel: 330-497-9396 or 866-785-LABS  
Fax: 330-497-0772

Nathan Pietras, Test America – North Canton project manager, is the laboratory point-of-contacts who will be responsible for the day-to-day coordination with the ADQM, ensuring that the project technical and contractual requirements are relayed to laboratory management and operations personnel, and tracking laboratory deliverables for the project. The laboratories' key management and associated responsibilities, facilities, and operating structure are further described in their laboratory quality assurance plan (copy maintained by the DuPont CRG project chemist).

### **3.2.5 Fieldwork**

The **PARSONS Field Team Leader (FTL), Keith Thompson**, is responsible for conducting / overseeing field activities in accordance with the Sampling Plan. The FTL will be always in touch with the PM and TD during the field activities; he will update the PM/TD on project progress and will work with the Project Chemist to coordinate the transportation of field samples to the analytical laboratories.

## **3.3 Special Training Requirements and Certifications**

A discussion of training requirements for field personnel is presented in Section 8.0 of the project HASP (Section 6.1 of the Work Plan). Laboratory-specific training procedures are documented in the laboratory QA Plan on file with the DuPont CRG project chemist.

Current OSHA HAZWOPER certification is mandatory for all project field personnel. The subcontract laboratories are required to maintain the required state and agency certifications and accreditation for the provided analytical services. If applicable certifications should lapse during the period of performance, the laboratory must notify the DuPont CRG Project Chemist immediately so that alternative arrangements for analytical services can be made.

## **4.0 QUALITY OBJECTIVES AND CRITERIA FOR MEASUREMENT DATA**

The overall objective of this QAPP is to achieve the specific DQOs of the project by establishing guidelines and procedures for sampling, field measurements and sample analyses. DQOs are qualitative and/or quantitative statements that outline the decision-making process for an investigation and specify the quality and quantity of data required to support this process.

The DQOs for this project were developed based on the objectives of the project, as defined in Section 2.3. During the project, both soil and groundwater samples will be collected and analyzed for specific analytical parameters based on sample matrix and sample location. The scope of work for the project is described in further detail in Section 3 of the Sampling Plan. Tables 2 and 3 of the project Sampling Plan summarize the proposed soil and groundwater sampling, respectively, for the investigation.

Consistent with procedures outlined in IDEM's RISC Technical Guide, soil and groundwater analytical data collected during the project will be compared to IDEM Industrial Use closure levels. Therefore, as summarized on Table 1, analytical reporting limits chosen for the project are less than or equal to these Industrial Use Closure Levels for the target analytes (arsenic, cadmium, lead, and zinc).

To ensure that the data generated for this project are consistent with the stated project DQOs and measurement performance criteria. These criteria address the specific analytical methods, field, and laboratory quality control checks that will be performed and/or quality control (QC) samples that will be analyzed to determine compliance with the data quality indicators including precision, accuracy/bias, representativeness, completeness, comparability (PARCC) and sensitivity. Specific criteria used to assess PARCC are presented in Section 13.

### **4.1 Field Quality Control**

The field activities will be performed in accordance with the standard procedures described in Section 5 of the Sampling Plan and Section 5 of this QAPP. Field forms, sample logs, and field notebooks will be used to ensure that proper documentation of field activities occur. Chain of custody (COC) procedures will be strictly followed, and samples will be collected and preserved in the proper manner. Field instruments will be calibrated / standardized in accordance with instrument manufacturer's procedural manuals.

To achieve the overall DQOs, proper sample collection and handling procedures as documented in the Sampling Plan must be followed. Assessment of field sampling precision and bias will be made by collecting field duplicates, matrix spike/matrix spike duplicate (MS/MSD) samples, and equipment blanks for laboratory analysis. The definitions and the frequency for each QC sample type are discussed below.

#### **4.1.1 Field Duplicates**

Field duplicate samples will be collected and analyzed to check for sampling and analytical reproducibility. Field duplicates allow measurement of total analytical bias (field and laboratory variance), including bias resulting from the heterogeneity of the duplicate sample itself. Field duplicates will be collected at a minimum frequency of one per 20 samples of a similar matrix.

#### **4.1.2 MS/MSD Samples**

MS/MSD/laboratory duplicates provide information about the effect of the sample matrix on the digestion and measurement method. One MS/MSD and/or MS/laboratory duplicate pair will be prepared and analyzed with every 20 or fewer investigative samples of the same matrix. MS/MSD/laboratory duplicate analyses are to be performed on investigative samples. To account for the additional volume needed by the laboratory to perform the analyses, extra sample volume will be collected from the designated groundwater or soil location.

#### **4.1.3 Equipment Blanks**

Equipment blanks will be prepared by running laboratory-supplied deionized water (American Society for Testing Materials [ASTM] Type II or equivalent) over/through non-disposable, reusable sample collection equipment after it has been cleaned (e.g., rinse water will be pumped through the sample pump and tubing for groundwater samples or will be poured over hand augers for soil samples). Equipment blanks will be stored and submitted to the analytical laboratory with the investigative samples to assess the quality of the data resulting from the field sampling program. Equipment blank samples are analyzed to check for procedural contamination and the influence of ambient conditions at the sampling site that may cause sample contamination. Equipment blanks will be collected at a frequency of 1 per day for investigative samples of a similar matrix collected using the same type of non-dedicated, non-disposable sampling equipment, and submitted for the same analytical parameters.

#### **4.2 Laboratory Quality Control**

The analytical laboratory has an established QC check program using procedure (method) and analytical blanks, laboratory control spikes, MS and MSDs. Details of the internal QC checks (such as continuing calibration criteria, spike recovery criteria, and surrogate recovery criteria) used by the laboratory are specified in the laboratory quality assurance plan. Assessment of laboratory QC will take into account the project-specific DQOs. Laboratory QC limits for precision and accuracy are identified in the laboratory SOP for each analytical method. (See Appendix B.)

#### **4.3 Inspection/Acceptance Requirements for Supplies and Consumables**

All laboratory or field consumables or supplies that come into contact with samples must be documented as free of contamination. Examples of consumables and supplies include gloves, glassware, soap or detergent, sample containers, reagents, and reagent water. Field consumables and supplies are demonstrated to be free of contamination through the collection of equipment blanks. Laboratory consumables and supplies are demonstrated to be free of contamination through the preparation and analysis of laboratory blanks. The laboratory quality assurance plan and analysis protocols identify critical supplies (such as calibration gases or standards, solvents or reagents) and the acceptance criteria for these supplies.

## **5.0 SAMPLING PROCEDURES**

The procedures for sample collection and for performing all related field activities are described in Section 3 of the Sampling Plan. Proposed methods are consistent with standard sampling protocols identified in IDEM guidance documents and will adhere to QA/QC policies and procedures outlined in this QAPP and in the Sampling Plan.

### **5.1 Sample Locations, Types, and Analytical Parameters**

The sample network design and rationale are based on the requirements and scope established in Section 3 of the Sampling Plan. Proposed soil borings and temporary groundwater monitoring wells for soil and groundwater sampling, respectively, purposes are shown in Figure 2 of the Sampling Plan. The sample identification and analytical testing requirements of the soil and groundwater samples are summarized in Tables 2 and 3, respectively, of the Sampling Plan. The format to be used for assigning field sample identifications is presented in Section 5.1.1 of the project Sampling Plan. Each soil sample will be labeled with unique alphanumeric sample identification (“ECH-S-AOI-1-1(0-0.5) that includes a 3-letter site identification (“ECH” for East Chicago Site), sample matrix (“S” for soil), sample location (“AOI-1-1 for Area of Interest 1, and boring number 1), and the depth (feet) of sample interval in parenthesis (“0-0.5”). Similarly, the groundwater samples will be labeled as ECH-W-MW-30S(15) for sample obtained from 15 feet depth in the shallow monitoring well number MW-30S at East Chicago Site.

Each sampling task and sampling matrix that requires analysis has defined sampling and analysis criteria that must be met to fulfill the requirements of the project. All soil samples will be analyzed for four metals (arsenic, cadmium, lead, zinc) using Methods SW6010B/SW3050B). All groundwater samples will be analyzed for four metals (arsenic, cadmium, lead, zinc) using Methods SW6010B/SW3050B). Field filtered and unfiltered groundwater samples will be collected for metals analysis.

### **5.2 Sample Preservation, Containers and Packaging**

Table 2 lists the sample containers, preservatives, and holding times applicable to the project. Pre-cleaned, pre-preserved (where applicable) sample containers, shipping containers, and packing materials will be provided by the laboratories and shipped to the project site or other location designated by the project geologist or field sampling team.

Sample containers should be filled completely to the preferred volume listed in Table 1 of the sampling Plan. If yield is insufficient to collect the preferred volume, at least the minimum volume listed in Table 1 must be collected for the requested analysis to be performed. If only the minimum sample is collected, the laboratory may have insufficient sample volume in cases where a dilution or reanalysis is required, which may require re-sampling. Whenever possible, the preferred volume should be submitted for analysis.

### **5.3 Decontamination Procedures**

Sample collection equipment and apparatus will be fully decontaminated before sampling and between sampling events. Disposable equipment will not require decontamination if the equipment is sealed in the original manufacturer’s packaging. Deionized water (Type II reagent-

grade) will be obtained from the laboratory or an equivalent from a commercially available source.

Sampling and measurement equipment will be decontaminated using the following sequence:

- Wash with non-phosphate detergent and tap water.
- Rinse with tap water twice.
- Rinse with distilled/deionized water.

Decontamination procedures are further described in Section 5.3 of the Sampling Plan. Decontamination water will be collected, containerized, and relocated to the staging area. Disposal of investigation-derived waste (IDW) will be managed and directed by DuPont in accordance with the project-specific Waste Management Plan.

## **6.0 CUSTODY PROCEDURES**

Sample custody procedures are summarized below and are further described in Attachment 1 of this QAPP. COC procedures are intended to maintain and permanently document sample possession from the time of collection to disposal, in accordance with USEPA guidelines. A sample is considered to be under a person's custody if it is in that person's possession, if it is in that person's view after being in that person's possession and was locked up by them to prevent tampering, or it has been placed in a designated secure area by that person.

### **6.1 Field Documentation**

#### **6.1.1 Field Logbooks**

The Sampling Plan describes documentation requirements for field logbooks and the reporting of field data. Each sampling team will maintain a detailed logbook. The signature of the author and the date of entry, the project name and number, and the location will accompany all entries in this log. At the end of each phase of the investigation, the field sampling personnel will deliver copies of all logbook pages and sample collection forms completed during that phase to the FTL.

#### **6.1.2 Sample Logs**

The FTL or his/her designated representative will be responsible for keeping a sample log to record information regarding each sample. The sample log may be maintained in the field logbook. The required information will include, but is not limited to, the following:

- Project number;
- Facility location;
- Sample location description;
- Sample identification;
- Sample Depth;
- Analyses requested;
- Time, date, and name of the sample collector; and
- Equipment used to collect the sample.

### **6.2 Field Custody Procedures**

The sample collector or sample custodian is personally responsible for the care and custody of the samples until they are transferred or properly dispatched. As few people as possible should handle the samples.

Sample container labels will clearly identify the particular sample and should include the following:

- Facility name and sample identification;
- Time and date sample was collected;
- Sample preservation used; and
- Analytical testing requested.

Field sample identification numbers for the project will be established by the project chemist and project geologist prior to sample collection in accordance with the *DuPont CRG Procedure for Completing Chain-of-Custody Forms* (Attachment 1). Where possible, adhesive-backed labels for sample containers and COC forms will be pre-printed by the laboratory/ADQM, and submitted to the site with the empty sample containers, coolers, and shipping materials.

All sample containers will be identified by the use of adhesive-backed sample labels and sample tags, which will be attached with wire around the sample container neck through a reinforced hole in the tag. Sample information that has not been pre-printed on the tag or label will be completed for each sample using waterproof, permanent ink.

Sample coolers will be shipped from the field and dispatched to the appropriate laboratory for analysis, with a separate signed custody record enclosed in and secured to the inside lid of each cooler. The field sample custodian will remove the back (pink) copy of the C-O-C form(s), and retain it with the field logbook. The original form and attached copy will be shipped to the laboratory with the samples. All shipping containers or coolers will be secured with strapping tape and custody seals for shipment to the laboratory.

Liquid and solid samples will be properly packaged in insulated coolers with sufficient wet ice to maintain the preservation temperature at 4 degrees Celsius ( $^{\circ}\text{C}$ )  $\pm$  2 $^{\circ}\text{C}$  (for samples requiring temperature preservation) during shipment to the laboratory. Temperature bottle blanks may be supplied by the laboratory and placed in each cooler (for samples requiring temperature preservation) prior to shipment to the laboratory to use for measuring the temperature of the samples upon receipt at the laboratory.

### **6.3 Laboratory Custody Procedures**

The laboratory quality assurance manual and associated laboratory standard operating procedures (SOPs) specify the laboratory sample handling and custody requirements. These requirements are consistent with National Environmental Laboratory Accreditation Conference standards. The laboratory sample custodian will receive and sign each COC form for the laboratory and record the date and time of receipt. The laboratory log-in record will explicitly state the condition of the sample containers, any evidence of damage, preservation, and the completeness of accompanying records. After inspection, each sample will be logged in and assigned a unique laboratory sample identification. In addition, the following information will be entered in the laboratory information management system for each sample:

- Field sample identification;
- Laboratory sample identification;
- Date received;

- Project name and number;
- Collection date;
- Sample type; and
- Analytical testing to be performed.

The condition, temperature, and appropriate preservation of samples will be checked and documented on the appropriate custody form.

After sample log-in is complete, the original COC forms and sample tags will be filed in the laboratory with the shipper's waybill or airbill attached. The laboratory project manager will immediately report any problems or discrepancies with the sample shipment to the DuPont CRG project chemist. The laboratory project manager is also responsible for sending a confirmation of sample receipt to the DuPont CRG project chemist by fax or e-mail. The original copy of the COC form and the sample tags will be included with the final data package submittal.

While in the laboratory, samples will be stored in limited-access, temperature-controlled areas. Refrigerators, coolers, and freezers will be monitored for temperature daily. The acceptance criteria for refrigerator and cooler temperatures will be below 4°C, and the acceptance criteria for freezer temperatures will be less than 0°C.

#### **6.4 Project Files**

DuPont, Parsons, and Test America North Canton Laboratoryies will maintain the contents of project files for the analytical data generated for the project, including all relevant records, reports, sample logs, field notebooks, photographs, drawings, subcontractor reports, including laboratory data deliverables and data validation reports, progress reports, interim project reports, and all sample custody documentation in a secure, limited access area. Prior to disposal of the files by each of the subcontractors according to their individual data retention policies, DuPont will be notified in writing and offered custody of the files. Otherwise, the contents of the files will be retained in each contractor's facility until directed by DuPont to purge their files and/or release them to DuPont. DuPont will ensure the retention of all reports, records, and other documents in accordance with the DuPont corporate record retention policy. At the direction of DuPont, USEPA-Region V and/or IDEM will be notified in writing and offered custody of the evidence file documentation 90 days prior to disposal of any documentation maintained in the files.

## **7.0 CALIBRATION PROCEDURES AND FREQUENCY**

Calibration procedures and frequency of calibration represent accepted techniques to ensure accurate sampling, monitoring, testing, and documentation of field work. This section describes the calibration procedures and the frequency at which these procedures will be performed for both field and laboratory instruments. All calibration procedures should utilize standards that are traceable to National Institute of Standards and Technology (NIST) materials.

### **7.1 Field Instrument Calibration**

Field instruments will be calibrated in accordance with the instrument operation manual and the project Sampling Plan.

If applicable to the measurements, the linearity of the instrument will be checked by using a two-point calibration with reference standards bracketing the expecting measurement. All calibration procedures performed will be documented in the field logbook and will include the date and time of calibration, name of person performing the calibration, reference standard used, temperature at which readings were taken, and the readings. Multiple readings for one sample or standard and readings for replicate samples will likewise be documented.

### **7.2 Laboratory Instrument Calibration**

Calibration procedures for laboratory instrumentation are addressed in the individual laboratory SOPs included in Appendix A of this QAPP.

Calibration procedures for a specific laboratory instrument will consist of initial calibration (two-to-five point), initial calibration verification (metals), and continuing calibration verification. The laboratory SOP for each analytical method (see Appendix A) summarizes the calibration frequency, criteria, and corrective action for the applicable laboratory analyses for this project. In all cases, the initial calibration will be verified using an independently prepared calibration verification solution or laboratory control sample (LCS). The instrument raw data (run logs, data files, etc.) archived at the laboratory will contain the following information: instrument identification, serial number, date of calibration, analyst, number and type of calibration solutions run, and the samples associated with these calibrations.

## **8.0 ANALYTICAL PROCEDURES**

The analytical program presented in this document describes the procedures that DuPont, its contractors, and its laboratories will use during implementation of the project. The laboratories will follow the QA/QC procedures listed in the methods referenced in this QAPP.

### **8.1 Field Measurements**

The standardization and QA information for the field measurements to be collected during the project are summarized in the project Sampling Plan.

### **8.2 Laboratory Analytical Methods**

Laboratory analytical methods for soil and groundwater samples are summarized on Table 1. All soil and groundwater samples will be analyzed for four metals (arsenic, cadmium, lead, and zinc), with the exception of soil samples from the proposed buffer zone along the fence line on the east separating the natural area using method SW6010B [*Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846)*, Fourth Edition, 2005, USEPA Office of Solid Waste and Emergency Response]; the buffer zone soil samples will be analyzed for all the metals and VOCs.

The contracted laboratory will perform all analytical testing, documentation, and reporting. Specific laboratory operations are governed by the laboratory quality assurance plan and SOPs, which control all laboratory activities from the arrival of samples to the reporting of validated analytical data. Supplemental QC criteria are provided in the individual methods and the individual laboratory SOPs used during the preparation and analyses of the samples.

Laboratory QC acceptance criteria may be stricter than that specified in this QAPP. If the laboratory QC acceptance criteria are less strict, then the acceptance criteria specified in this QAPP shall be the default criteria for the project. Usability of the laboratory data will be evaluated against the criteria specified in this QAPP.

### **8.3 Laboratory Reporting Limits**

The fundamental QA objective for the sensitivity of the analytical data is to achieve quantitation limits (sensitivities) as specified in the analytical protocol.

Analytical sensitivities to be achieved by the laboratory for the project are presented in Table 1 for soil and groundwater sample analytical parameters and analytes. Analytical sensitivity is represented by the method detection limit (MDL) for each analyte for each analytical method. The sample results will be reported to the MDL values as listed in the table. Reporting limits presented in this plan for the parameters are general estimates taken from practical quantitation limits (PQLs) and MDLs listed in the laboratory's QA plan. The required analytical sensitivities for the project will be those determined by, and achievable by, the laboratory's current MDLs and PQLs. The actual PQLs and MDLs may vary from sample to sample in accordance with standard laboratory practices (e.g., dilution resulting from high analyte concentration). The laboratory will be required to maintain and submit the results of current MDL studies for the required analyses.

## **9.0 INTERNAL QUALITY CONTROL CHECKS**

QC checks are operational techniques and activities to fulfill the requirements of QA policies. QC is an integrated system of activities in the areas of quality planning, quality assessment, and quality improvement to provide the program with measurable assurance that the required quality standards are met. The intent of the internal QC program is to detect potential problems at the source and, if necessary, trace the sample analytical pathways for introduction of contamination. The QC data generated in the field will be used to monitor sampling technique, reproducibility, and cleanliness. QC data generated by the laboratory will monitor not only reproducibility (precision) in the laboratory methods and cleanliness, but also accuracy in samples submitted for analysis. Laboratory analytical QC performance criteria are summarized in the laboratory SOP for each analytical method. (See Appendix A). During the data evaluation and validation processes, variability in sampling technique and laboratory performance will be assessed separately.

### **9.1 Field Quality Control**

Quality control procedures for field measurements will be accomplished by documenting the reproducibility and measurements in the field by obtaining multiple readings and by calibrating each instrument used in the field (where appropriate).

Quality control of field sampling will involve the collection of field duplicates, MS/MSD samples, and equipment blanks in accordance with the applicable procedures described in the Section 6.0 of the Sampling Plan and in accordance with the frequencies provided in Section 4 of this QAPP.

Field system and performance audits are an integral part of the internal QC process. Section 11 details the frequency, reporting, corrective action, and coverage of the audits.

### **9.2 Laboratory Quality Control**

The laboratories proposed for this project have QC programs in place to ensure the reliability and validity of analyses performed there. All sample preparation and analytical procedures are documented in writing as SOPs, and each SOP includes a QA or QC section that addresses the minimum QC requirements for the procedure. Internal QC checks may differ slightly depending on the specific procedure, but in general, the QC requirements include the following:

- A minimum of one method/preparation blank will be analyzed with each prep batch of up to 20 field samples. Method/preparation blanks are generated within the laboratory and consist of all reagents specific to the method. Method blanks are carried through every aspect of the procedure, including preparation, clean-up, and analysis. For most analytes of interest in this program, method blanks should consist of deionized water (with a volume approximately equal to the sample volume processed). Method/preparation blanks are prepared and analyzed at a frequency of one per analytical batch of less than or equal to 20 samples of a similar matrix.
- A minimum of one MS/MSD pair or MS/laboratory duplicate will be analyzed for every 20 field samples to determine accuracy, precision, and the presence of matrix effects. Control limits for precision and accuracy are summarized on Table 1

- A minimum of one LCS for every batch of less than or equal to 20 field samples of a similar matrix will be analyzed to determine recovery. LCSs are laboratory-generated samples consisting of a known and well-characterized matrix fortified with the target analytes. LCSs are used to monitor accuracy and bias of the laboratory's day-to-day and ongoing performance of the applicable methods. Control limits for precision and accuracy are summarized on Table 1.
- Multilevel initial calibration of instruments will be performed to establish calibration curves. The analysis of calibration verification standards (metals and general chemistry) will be performed and recalibrated if these do not meet criteria.
- Calibration blanks will be analyzed for metals prior to and between analysis of samples.
- Inductively coupled plasma (ICP) interference check standards will be analyzed after initial calibration and after samples are analyzed.
- An ICP serial dilution analysis will be analyzed for every 20 samples of a similar matrix.
- Control limits will be statistically determined by the laboratories.

All data obtained will be properly recorded. The data report will include a full deliverable package with sufficient documentation to allow the recipient to reconstruct QC information and compare it to QC criteria. Any samples analyzed in nonconformance with the QC criteria where the nonconformance is not attributable to sample matrix interferences will be re-analyzed by the laboratory if sufficient volume is available. Sufficient volumes or weights of samples should be collected to allow re-analysis as necessary.

## **10.0 DATA REDUCTION, REPORTING, AND VALIDATION**

This section addresses the QA activities that occur after the data collection phase of the project. Implementation of these elements determines if the data conform to the specified criteria and satisfy the project objectives.

The review performed on the data at each level shall be documented, beginning with the laboratory's review of the analytical results through the independent data review performed by the data user, and finally review by IDEM. The intent is to capture the review effort of each party to minimize duplicative efforts, to ensure that critical elements of the review process are not overlooked, and to set in place a system that can be audited or inspected.

All data generated through field activities or by laboratory operations will be reduced and validated prior to final reporting. No data shall be released by the laboratory until subjected to the reduction and validation procedures discussed in this section.

### **10.1 Data Reduction**

Data reduction involves the process of generating qualitative and quantitative sample information through observations, field procedures, analytical measurements, and calculations. Data reduction occurs with the following:

- The work plan through sample locations and naming conventions

- The field sampling process through the use of field logs and measurements
- Project team communication with the laboratory via sample analysis requests
- Field operations with collection, preservation, and C-O-C documentation
- Laboratory operations with sample receipt and handling, sample preparation and analysis, collection of raw data, and generation of laboratory results
- Post-laboratory operations with the evaluation of data and organization of analytical results into a format suitable for use and inclusion in documents

Data reduction steps include field operations, laboratory operations, and report preparation options.

### **10.1.1 Field Data Reduction**

Field data reduction is initiated with the recording of field measurement and data into field logbooks immediately after the measurements are taken or the samples are collected. If errors are made, results will be legibly crossed out, initialed, and dated by the field member, and corrected in a space adjacent to the original (erroneous) entry. Prior to transmittal of the logbook forms to the DuPont CRG project chemist for entry into the DuPont CRG database, the field team leader or project geologist will review the forms for completeness, clarity, and transcription errors.

### **10.1.2 Laboratory Data Reduction**

The laboratory analyst is responsible for the reduction of raw data and shall clearly identify any problems or anomalies that might affect the quality of the data. The analyst shall review 100% of the data and shall verify that data reduction protocols are correct. At least 10% of the data shall be reviewed independently by a senior analyst or by the supervisor of the laboratory analyst. Both the analyst and independent review shall include the following:

- Calibrations and calibration verifications
- Instrument and system performance checks
- Blanks
- LCS recoveries and precision
- MS/MSD recoveries and precision
- Duplicate sample precision
- Compound identification and quantification
- Serial dilutions, if applicable
- Interference check sample results, if applicable

- Post-digestion spike recoveries, if applicable

The laboratory QA section and/or laboratory project manager shall review the completed data packages and perform a reasonableness check review on the completed data packages. The QA section and/or laboratory project manager shall ensure that all deliverables are present, that qualifiers have been applied to the data, and that nonconformance and other issues have been addressed.

## **10.2 Data Reporting**

The laboratory data deliverables will be submitted to the DuPont Corporate Remediation Group's (CRG) Analytical Data Quality Management (ADQM) Group in both hardcopy and electronic data formats. The type of data packages provided by the laboratory will be similar to a USEPA Contract Laboratory Program (CLP)-type or "full-documentation" hard copy data package, which is discussed below.

### **10.2.1 Data Package**

The laboratories will provide the following hard copy data package described below to the DuPont CRG project chemist within the specified turnaround time. Each data package should contain the completed original C-O-C forms, completed sample receipt forms, sample tags, and the reportable and supporting data described below. Data package requirements were developed consistent with those of the laboratory contract.

#### **10.2.1.1 Statement of Quality Assurance**

The laboratory should provide a signed statement attesting that all analytical methods were performed using acceptable methods, and that the QA/QC procedures stipulated in these methods were followed.

#### **10.2.1.2 Narrative/Comment Section**

The laboratory should document and report all observed problems and/or anomalies observed by the laboratory that might affect the quality of the data.

#### **10.2.1.3 Sample Identification Cross-Reference**

Sample identification cross-reference information facilitates the correlation of field and laboratory sample identifications as well as the association of field samples with a particular laboratory batch. The data package should include a listing of C-O-C field sample identifications cross-referenced to the associated laboratory sample identifications. The data package should include an easy and unambiguous means of associating a specific QC sample (for example, the laboratory duplicates and MS/MSD samples) with specific field samples.

#### **10.2.1.4 Test Reports for Samples**

Sample test reports provide specific information for each sample regarding analytical results and methods. The data package should include the test reports for all reported data. Analytical results (i.e., detected results and non-detected results) should be adjusted for sample characteristics, laboratory preparations/cleanups, and/or laboratory adjustments. Soil samples

must be adjusted for moisture content (dry-weight reporting). All analyte detections above the analyte MDL should be reported.

#### **10.2.1.5 QC Summary**

- **Surrogate Recovery Data:** The data package should include the surrogate data as applicable to the analytical method performed. The surrogate data can be included on the test report for each sample, or can be included on a summary form, provided that the surrogate results are clearly and unambiguously linked to the sample from which the results were measured. The surrogate data should include the percent recovery (%R) and the laboratory's QC limits.
- **Laboratory Blank Samples:** The data package should include test reports or summary forms for all blank samples (for example, method blanks and preparation blanks) pertinent to sample analyses. Blank sample test reports should contain all of the information (e.g., surrogate data) specified for environmental sample test reports/summary forms. Sample data should not be blank corrected.
- **Laboratory Control Sample:** The data package should include the LCS test reports or LCS result summary forms. An LCS should be included in every preparation batch and should be taken through the entire preparation, cleanup, and analysis procedures. The LCS samples should contain the target analytes identified for the project in the laboratory SOP applicable to the analytical method performed. (See Appendix A) The LCS test report, or LCS results summary form, should include the amount of each analyte added, the %R of the amount measured relative to the amount added, and QC limits for each analyte in the LCS.
- **Matrix Spike/Matrix Spike Duplicate Samples:** The project MS/MSD samples should be spiked with the project-specified analytes identified for the project in the laboratory SOP applicable to the analytical method performed. (See Appendix A). The project MS/MSD summary forms should include identification of the compounds in the spike solution, the amount of each compound added to the MS and the MSD, the parent sample concentration, the concentration measured in both MS and MSD, the calculated %R and relative percent difference (RPD), and the QC limits for both %R and RPD. The form should also include the laboratory batch number and the laboratory identification number of the sample spiked.
- **Laboratory Duplicates:** If a laboratory duplicate was analyzed, the data package should include the duplicate sample test report summary form. The duplicate sample test report should include the calculated RPD between the sample and the sample duplicate results and the QC limits for the RPD. The test report should also include the laboratory batch number and the identification number of the sample.

#### **10.2.1.6 Lab Bench Sheets**

The laboratory should provide QA/QC information for characteristic tests such as pH and NIST annual calibration certifications.

## **10.2.2 Additional Requirements**

The data package should also contain instrument printouts, laboratory notebook records, calibration and instrument performance records, and other supporting data deliverables, as described below. Each data sheet and all entries on the data sheet should be legible. Specific reporting formats are not required. However, each record must be clearly labeled with the type of data provided and with either the applicable laboratory quality control batch numbers or applicable dates. Supporting data for each class of analyses shall be grouped together in the deliverable package.

### **10.2.2.1 Raw Data**

The laboratory should provide the following supporting data for each field sample, laboratory blank, LCS/LCSD, MS/MSD and duplicate sample, as appropriate for the analytical method:

- Real-time instrument printouts
- Laboratory notebook pages
- Raw data

If an analyte and concentration are provided on the supporting data, but will not be reported in the test reports, the concentration should be lined out, dated, and initialed, and a brief explanation for the deletion from the test report should be provided. Suitable explanations include (but are not limited to) “< MDL” (i.e., analyte concentration is less than laboratory method detection limit) or “FP” (i.e., false positive – analyte did not meet method identification requirements).

### **10.2.2.2 Extraction/Digestion Logs**

The laboratory should also provide extraction/digestion logs that document initial volumes/weights and final volumes for all field and quality control samples. Logs should identify the preparation method using a USEPA method reference number. Quality control samples should be identified on the logs (the laboratory-assigned identification that appears on the quality control reports included with the test reports is sufficient).

### **10.2.2.3 Instrument Performance Records**

The laboratory should provide instrument performance records as appropriate to the analytical method.

### **10.2.2.4 Calibration Records**

The laboratory should provide the following supporting data for initial and continuing calibration verifications as appropriate for the analytical method:

- Initial calibration summary form listing each target analyte, standard identification, the response factor for each target analyte in each standard, average response factor or slope and intercept, and the relative standard deviation (RSD) or correlation coefficient (r).

- Calibration verification summary form listing each target analyte, standard identification, the response factor for each target analyte in the verification standard, the average response factor or slope and intercept from the initial calibration curve, and the percent difference or percent drift (%D). Alternatively, the calibration verification summary may list the true concentration, the found concentration, and the %R.
- Real-time instrument printouts (non-chromatographic methods).
- Laboratory notebook pages (non-chromatographic methods).

#### **10.2.2.5 Metals Quality Control Samples**

The laboratory should provide the following supporting data for metals analyses, as appropriate to the analytical method:

- Initial calibration of ICP spectrometer
- Initial calibration of atomic emission spectrometer (AES)
- Interference check sample results
- Duplicates
- Spikes and LCS recovery
- Serial dilution results
- Post-digestion spike results
- Method of standard addition results
- QA/QC information for mercury: holding times/preservation, calibration/instrument run QA, sample results, preparation/matrix QC, method blank and spikes

#### **10.2.3 Electronic Data Deliverables**

The DuPont CRG project chemist will manage the analytical and field data generated for the project in the DuPont CRG Envista database. The laboratory will submit electronic data deliverables in a format suitable for input into the database, as described in Appendix B (*DuPont Lab Network Envista EDD Specification, Version 1.0*). This document discusses the required fields that must be included and valid value lists. All results reported in the electronic data submittal must match the hard copy data summary. Electronic data deliverables may be submitted via the DuPont secure Web site drop box or on diskette with the hardcopy data packages.

### **10.3 Data Validation**

Data validation is the process of verifying that qualitative and quantitative information generated relative to a given sample is complete and accurate. Data validation procedures will be performed for both field and laboratory operations as described below.

### **10.3.1 Procedures Used to Evaluate Field Data**

Procedures to evaluate field data for this project primarily include the review of field logbooks to check for completeness, clarity, and transcription errors made by the field team members. These procedures are performed to ensure that field measurements and various quality control analyses were properly performed and documented. This task will be the responsibility of the project geologist or field team leader, who will otherwise not participate in making any of the field measurements or in adding notes, data, or other information to the logbook.

### **10.3.2 Procedures Used to Evaluate Laboratory Data**

#### **10.3.2.1 DuPont In-House Review**

As discussed in Section 10.2.3, the laboratory data deliverables will be submitted to the DuPont CRG Analytical Data Quality Management (ADQM) Group in both hardcopy and electronic data formats. Upon receipt of the deliverables package, the ADQM Group will perform the following data review functions:

- Load the electronic data into the CRG Envista database to facilitate the semi-automated review process and accessibility of the project data.
- Perform a completeness check of project data to ensure all request samples were analyzed and the test results were reported.
- Conduct a QC review of laboratory data to evaluate batch integrity per SW-846 guidance and to ensure that QC acceptance criteria exceptions (versus laboratory and/or project limits) are properly documented via data qualifiers and/or narrative comments.
- Submit 100% of project laboratory data for evaluation via the DuPont semi-automated in-house data review process (DDR), which applies data usability qualifiers based on the specific project and/or laboratory QC limits; holding time criteria; equipment, trip, and laboratory method blank detections, and quantitation between the MDL and PQL.

The DuPont CRG project chemist will oversee the in-house data review process, coordinate any questions and/or data re-submittals that may be required, and prepare the data usability narratives for the project team. The DuPont CRG project chemist will also coordinate the independent data validation to be performed on selected sample locations/matrices.

#### **10.3.2.2 Data Validation**

All of the data to be generated for the supplemental CMS investigation will be reviewed via as part of the DuPont data review functions, which equate to an equivalent of a summary-level validation. Because the DuPont data review is equivalent to a summary level validation on 100% of the data, an additional third party summary validation of a subset is not deemed necessary.

#### **10.4 Data Acquisition Requirements (Non-direct Measurements)**

Data acquired from non-direct measurement sources include but are not limited to environmental agency files, soil surveys, computer databases and literature files, historical site reports, and information obtained during interviews.

A comprehensive evaluation of the historical data collected from previous site investigations was conducted using the PARCC criteria as guidance. The results of this evaluation are summarized in the report *Corrective Action Evaluation DuPont Electronic Polymers* issued by the DuPont CRG in October 2003.

#### **10.5 Data Management**

The primary data management goal is to facilitate the analysis, interpretation, and reporting of all data collected as part of the project. The data must be organized to allow assessment of data completeness, data representativeness, and data quality. This objective will be accomplished by keeping complete and correct records of samples collected, sample analytical results, QA/QC results, data evaluation results, data corrections, data analyses, and data manipulations. Maintenance of complete records, both paper and electronic, is of principal importance to accomplish the data management objective and to provide project data for statistical, spatial, and other interpretive analyses and for reporting.

## **11.0 PERFORMANCE AND SYSTEM AUDITS**

Performance and system audits of both field and laboratory activities will be conducted to verify that sampling and analysis are performed in accordance with the procedures established in the project SP and QAPP. The audits of field and laboratory activities include two independent parts: internal and external audits.

### **11.1 Field Performance and Systems Audits**

#### **11.1.1 Internal Field Audits**

Internal audits of field activities, including sampling and field measurements, will be conducted by the project manager or her designee. An internal field audit will be conducted at least once during the course of the field sampling and will include the examination of field sampling records, field instrument operating records, sample collection, handling, and packaging in compliance with the established procedures, maintenance of QA procedures, proper completion of C-O-C forms, etc. The audit will also review field measurement records, instrument calibration records, and sample documentation. Follow-up audits will be conducted if necessary to correct any deficiencies and to verify that QA procedures are maintained throughout the project sampling program.

#### **11.1.2 External Field Audits**

External field audits may be conducted by the IDEM at its discretion. External field audits may or may not be scheduled with the field team and will be conducted according to the field activity information defined in the project work plan, SP, and QAPP documents.

### **11.2 Laboratory Performance and Systems Audits**

#### **11.2.1 Internal Laboratory Audits**

Internal laboratory audits will be conducted by the laboratories' QA officer or designate, normally on a twice-per-year schedule. With regard to laboratory performance audits, the laboratories participates in various performance evaluation (PE) audit programs, including, but not limited to internal programs, the USEPA water pollution and water supply performance evaluation program, and other agency PE and round-robin programs.

The internal laboratory systems audits will include an examination of laboratory documentation on sample receiving, sample log-in, sample storage and disposal, C-O-C procedures, sample preparation and analysis, and instrument operating records.

Lancaster Laboratories and Test America are a part of the DuPont CRG laboratory audit program. Typically laboratories are audited on a biennial schedule, Laboratory audit records are maintained in the project file.

#### **11.2.2 External Laboratory Audits**

An external laboratory audit may be conducted by the IDEM or USEPA Region V.

External laboratory audits may include (but may not be limited to) review of laboratory preparation and analytical procedures, laboratory on-site visits, and the submittal of performance evaluation samples for analysis. Failure of any or all audit procedures and associated corrective actions can lead to laboratory disqualification and replacement.

An external on-site audit may include a review of the following:

- Sample receipt and log-in procedures
- Sample custody, security, storage, and disposal
- Sample tracking procedures
- Instrument calibration records, instrument logs and statistics
- QA procedures
- Log books
- Sample preparation procedures and SOPs
- Analytical procedures and SOPs
- Data quantitation and reporting
- Housekeeping and glassware maintenance procedures
- Personnel interviews
- An audit debrief to offer potential corrective action

## **12.0 PREVENTIVE MAINTENANCE**

### **12.1 Field Instruments**

Specific preventive maintenance procedures to be followed for field equipment are those specified by the manufacturer of the particular instrument and/or required by the project Sampling Plan. The details of all preventive maintenance will be recorded in the field logbook each time maintenance is performed. Critical spare parts such as tape, pH probes, and batteries will be kept on site during sampling periods to reduce downtime. Backup instruments and equipment will be available on site or shipped via overnight courier to avoid delays in the field sampling schedule. Field equipment routine daily maintenance will include but is not limited to the following:

- Remove surface dirt and debris from exposed surfaces of the sampling equipment and measurement systems.
- Decontaminate the sampling equipment and measurement systems before and after use.
- Perform daily inspections of sampling equipment and measurements systems for possible problems (e.g., cracked or clogged lines or tubing or weak batteries).
- Check instrument calibrations.
- Charge any battery packs for equipment when not in use.

### **12.2 Laboratory Instruments**

As part of their internal QA/QC programs, the contract laboratories will conduct a routine preventive maintenance program to minimize the occurrence of instrument failure and other system malfunctions that may impact the progress of sample analysis. As documented in their laboratory quality assurance plans and specific analytical SOPs, designated laboratory employees will regularly perform scheduled maintenance and repair (or coordinate with the vendor service department for the repair of) all instruments. Every time maintenance is performed, it will be documented in the laboratory's applicable maintenance record logs. The maintenance records will include, at a minimum, actions taken, parts replaced, analyst's initials, and the date the maintenance was performed, whether by the analyst or by a contracted service representative. The laboratory will maintain a complete inventory of replacement parts needed for preventive maintenance and spare parts that routinely need replacement (e.g., septa, gauges, sources, and detectors).

### 13.0 SPECIFIC ROUTINE PROCEDURES USED TO ASSESS DATA PRECISION, ACCURACY, AND COMPLETENESS

Data quality assessment determines whether data generated for the program are accurate and are consistent with the DQOs established for the project. The PARCC data quality indicators aid in the assessment process. The specific procedures used to evaluate these indicators are given below.

#### 13.1 Precision

Precision is defined as the measurement of agreement of a set a replicate results without assumption of any prior information as to the true result. Precision is assessed by means of duplicate/replicate sample analyses. For some analyses, duplicate spiked samples are prepared at the laboratory by dividing a designated sample from the sample set into equal aliquots and spiking each of the aliquots with a known amount of analyte. For other analyses, duplicate samples are prepared at the laboratory by just dividing the designated sample into equal aliquots. This process allows the analyst to determine the precision of the preparation and analytical associated with the duplicate sample. The RPDs between the duplicate spiked sample results and/or the duplicate sample results are calculated and compared to the control limits (see Table 1 of this QAPP). The analyst is responsible for this comparison and applies appropriate corrective action as needed. The RPD is calculated according to the following formula:

$$\frac{x_1 - x_2}{\frac{x_1 + x_2}{2}} \times 100\%$$

Where

$x_1$  = original sample concentration

$x_2$  = replicate sample concentration

Precision may also be assessed by calculating the RSD for three or more measurements. RSD is calculated according to the following formula:

$$\% RSD = \frac{S}{\text{mean}} \times 100\%$$

Where

$$S = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n - 1}}$$

$X_i$  = each individual value used for calculating the mean

$\bar{x}$  = the mean of n values

n = the total number of values

In addition to evaluation of the method precision, duplicate samples will be collected in the field and analyzed independently. The results will be used to evaluate the total systems' variability, including sampling variations. The analytical precision produced by laboratory replicate

analyses will be evaluated by both the laboratory and during data evaluation; however, field duplicate precision will be evaluated only during data validation.

### 13.2 Accuracy

Accuracy is defined as the nearness of a result or the mean of a set of results to the true value. To ensure proper accuracy of the analytical procedures, environmental samples will be designated for the laboratory to spike with known amounts of the target analytes to be evaluated. In general, a sample spike should be included in every set of 20 field samples of the same matrix analyzed by a particular method. The increase in concentration of the analyte observed in the spiked sample, due to the addition of a known quantity of the analyte and compared to the reported value of the same analyte in the unspiked sample, determines the %R.

In addition to spiking environmental samples, accuracy for the majority of the target analytes will also be assessed through determination of %Rs for LCSs. The laboratory will compare the %Rs to the control limits for the particular analysis (Table 1 of this QAPP). The analysis is responsible for this comparison and will apply appropriate corrective action as needed. The %R for a spiked samples (MS or MSD) is calculated according to the following formula:

$$\% \text{ Recovered} = \frac{(\text{amount in spiked sample} - \text{amount in sample})}{\text{known amount added}} \times 100\%$$

%R for LCS results is determined according to the following formula:

$$\% \text{ Recovered} = \frac{(\text{experimental concentration})}{\text{known amount added}} \times 100\%$$

### 13.3 Representativeness

Representativeness qualitatively expresses the degree to which the sample collection and analytical protocols adequately reflect the environmental conditions present at the sampling location.

The collection and analysis of field duplicate samples and evaluation of newly obtained results as compared with previous historical data obtained at the site will be used to assess both field and laboratory representativeness.

### 13.4 Completeness

Completeness is the ratio of the number of valid sample results to the total number of samples analyzed with a specific matrix and/or analysis. Following completion of the analytical testing and independent data review for each sampling event associated with this project, the percent completeness will be calculated according to the following formula:

$$\% \text{ Completeness} = \frac{\text{usable data obtained}}{\text{total data planned to be obtained}} \times 100\%$$

### **13.5 Comparability**

Comparability expresses consistency in sampling and analytical procedures so that one data set can be compared to another. For this project, all measurement data will be calculated and reported in units consistent with standard practice to allow comparability of data. In addition, sampling procedures and, where possible, field-sampling personnel will be consistent for the collection of all samples.

## **14.0 CORRECTIVE ACTION**

Corrective action is the process of identifying, recommending, approving, and implementing measures to counter unacceptable procedures or poor QC performance, which can affect data quality. The need for corrective action may occur during field activities, laboratory analyses, data evaluation/validation, and data assessment. Any corrective action proposed and implemented will be documented in quality assurance reports/memorandums to management. Proposed corrective action will be implemented only after approval by the project manager. If immediate corrective action is required, approvals secured by telephone from the project manager will be documented in a follow-up memorandum.

For noncompliance problems, a formal, written corrective action plan will be determined and implemented at the time the problem is identified. The person who identified the problem is responsible for notifying the project manager, who will in turn notify the appropriate individuals. Issues concerning the laboratory analysis of project samples or data quality will be transmitted to the project manager by the DuPont CRG project chemist. The project health and safety officer will be immediately advised of any issues, concerns, or incidents involving personnel safety and welfare.

Any nonconformance with the established QC procedures in the QAPP or will be identified and corrected in accordance with QAPP protocols. All modifications to the sampling procedures, analytical procedures, data assessment and/or reporting will be submitted for approval using QAPP addenda. These addenda will include an approval/signoff page similar to the original QAPP document that will encompass key project personnel. All key management, as outlined in Section 1.4, will have the authority to initiate and request QAPP modifications. All preliminary modifications will be orchestrated through the Parsons Project Chemist who will compile and format the addendum and submit it to the project team and other appropriate individuals/agencies for approval.

### **14.1 Field Corrective Action**

Corrective action in the field may be necessary when the sample network is changed, sampling procedures and/or field analytical procedures require modification, or other events result from unexpected conditions. In such circumstances, the field team will usually identify the need for and recommend a field corrective action. The project manager will approve the corrective measure that the field team will implement. The field team leader will ensure that the corrective action has been implemented.

Corrective action resulting from field audits will be implemented immediately if data may be adversely affected due to unapproved methods or improper use of approved methods. Implementation of corrective actions resulting from field audit findings will be documented in quality assurance reports to the entire project management team. In addition, all corrective actions implemented will be documented in the field logbook. No staff member will initiate corrective action without prior communication of finding through the proper communication channels.

## **14.2 Laboratory Corrective Action**

Corrective action in the laboratory may occur prior to, during, and after initial analyses. Corrective action procedures incorporated in the laboratory SOPs included in Appendix A of this QAPP specify most conditions during or after analysis that automatically trigger corrective action or optional procedures. These conditions may include sample dilution, additional sample cleanup, or automatic reanalysis when certain QC criteria are not met. In addition, conditions such as broken sample containers, insufficient sample volume, multiple phases or unexpected sample matrices, high/low pH readings, and potentially high concentration samples, may be identified during sample log-in or just prior to analysis. Following consultation with the laboratory analysts, it may be necessary for the laboratory QA officer to approve the implementation of corrective action.

A member of the laboratory technical staff will identify the need for corrective action. The laboratory QA officer, in consultation with members of the technical staff, will approve the required corrective action. The laboratory QA officer will also ensure implementation and documentation of the corrective action. If the nonconformance causes project objectives not to be achieved, it will be necessary to contact all levels of project management for their concurrence.

These corrective actions are performed prior to release of the data from the laboratory. The corrective action will be documented in a laboratory corrective action report or logged-in and included in the final data documentation package.

## **14.3 Corrective Action during Data Evaluation and Data Assessment**

The need for corrective action may be identified during the DuPont data evaluation process or data assessment by the project team. Potential types of corrective action may include re-sampling by the field team, the re-submittal of missing, incomplete, or incorrect information by the laboratory, or reanalysis of samples by the laboratory. The percent completeness will be calculated and used to determine whether the data quality meets the objectives for the project. If the completeness objectives are not met for individual parameters, the reasons for the invalid data will be reviewed by the project team. Depending on the ability to re-mobilize sampling teams, the reasons for the incomplete data, and the effect of the incomplete data set on the accomplishment of the project objectives, additional samples may be collected and analyzed. An evaluation will also be conducted if the analysis set is incomplete for a given sample location (sample container breakage, C-O-C errors). If the project team determines that the missing results are critical to accomplishing work plan objectives, additional sampling will be conducted to obtain the missing data. The project manager will be responsible for approving the implementation of corrective action, including re-sampling, during data assessment.

## **15.0 QUALITY ASSURANCE REPORTS TO MANAGEMENT**

The deliverables associated with the tasks identified in the Work Plan will contain separate QA sections in which data quality information collected during the task is summarized. These deliverables will include the report on the accuracy, precision, and completeness of the data (as determined during data evaluation and validation), as well as the results of any performance and system audits, and any corrective action needed or taken during the project. Separate QA reports, if required, will be the responsibility of the project manager.

## TABLES

**TABLE 1**

**ANALYTICAL REQUIREMENTS:**

**METHOD, ANALYTES, SENSITIVITY (MDL/RL), SCREENING CRITERIA**

ANALYTICAL METHOD	ANALYTE	ANALYTICAL SENSITIVITY REQUIREMENTS						SCREENING CRITERIA <sup>(1)</sup>	
		Soil RL	Units	MDL	Water RL	Units	MDL	Soil mg/kg	Water µg/L
SW6010B	Antimony	1	mg/kg	0.39	10	µg/L	1.8	37	41
	Arsenic	1	mg/kg	0.3	10	µg/L	3.2	5.8	10
	Cadmium	0.2	mg/kg	0.036	2	µg/L	0.66	77	51
	Chromium	0.5	mg/kg	0.2	5	µg/L	2.2	10,000	150,000
	Cobalt	5	mg/kg	0.16	7	µg/L	1.7	n/a	n/a
	Lead	0.3	mg/kg	0.19	3	µg/L	1.9	230	42
	Titanium	0.5	mg/kg	0.45	50	µg/L	5.3	n/a	n/a
	Vanadium	5	mg/kg	0.57	7	µg/L	0.64	n/a	n/a
	Aluminum	5	mg/kg	0.12	200	µg/L	97	n/a	n/a
	Barium	20	mg/kg	9.6	200	µg/L	0.67	10,000	20,000
	Boron	20	mg/kg	0.071	200	µg/L	34	n/a	n/a
	Copper	20	mg/kg	3.4	25	µg/L	4.5	2,900	4,100
	Iron	2.5	mg/kg	0.74	100	µg/L	81	n/a	n/a
	Manganese	10	mg/kg	4.9	15	µg/L	0.41	n/a	n/a
	Nickel	1.5	mg/kg	0.074	40	µg/L	3.2	2,700	2,000
	Selenium	2	mg/kg	1	250	µg/L	4.1	53	510
Zinc	4	mg/kg	0.27	20	µg/L	5	10,000	31,000	
SW7471A (soil) SW7470A (water)	Mercury	0.1	mg/kg	0.015	0.2	µg/L	0.12	32	31

<b>SW9012A</b>	Cyanide	0.5	mg/kg	0.1	0.01	µg/L	0.005	9.6	2,000
<b>SW9060</b>	TOC	10	mg/kg	0.24	1	µg/L	0.24	n/a	n/a
<b>SW8260B</b>	Acetone	20	mg/kg	6.3	10	µg/L	1.1	370	92,000
	Benzene	5	mg/kg	0.23	1	µg/L	0.13	0.35	52
	Bromodichloromethane	5	mg/kg	0.28	1	µg/L	0.15	0.51	80
	Bromoform	5	mg/kg	0.33	1	µg/L	0.64	4.7	1,000
	Bromomethane	5	mg/kg	0.54	1	µg/L	0.41	0.7	140
	2-Butanone	20	mg/kg	1.4	10	µg/L	0.57	250	61,000
	Carbon disulfide	5	mg/kg	0.44	1	µg/L	0.13	82	10,000
	Carbon tetrachloride	5	mg/kg	0.37	1	µg/L	0.13	0.29	22
	Chlorobenzene	5	mg/kg	0.33	1	µg/L	0.15	27	2,000
	Dibromochloromethane	5	mg/kg	0.55	1	µg/L	0.18	n/a	n/a
	Chloroethane	5	mg/kg	0.86	1	µg/L	0.29	10	990
	Chloroform	5	mg/kg	0.29	1	µg/L	0.16	4.7	1,000
	Chloromethane	5	mg/kg	0.41	1	µg/L	0.3	n/a	n/a
	Cyclohexane	10	mg/kg	0.33	1	µg/L	0.12	69	55,000
	1,2-Dibromo-3-chloropropane	10	mg/kg	1.3	2	µg/L	0.67	na	n/a
	1,2-Dibromoethane	5	mg/kg	0.5	1	µg/L	0.24	n/a	n/a
	1,2-Dichlorobenzene	5	mg/kg	0.36	1	µg/L	0.13	220	9,200
	1,3-Dichlorobenzene	5	mg/kg	0.35	1	µg/L	0.14	8.9	310
	1,4-Dichlorobenzene	5	mg/kg	0.66	1	µg/L	0.13	3.4	120
	Dichlorodifluoromethane	5	mg/kg	0.5	1	µg/L	0.31	n/a	n/a
	1,1-Dichloroethane	5	mg/kg	0.36	1	µg/L	0.15	58	10,000
	1,2-Dichloroethane	5	mg/kg	0.34	1	µg/L	0.22	0.15	31
	cis-1,2-Dichloroethene	5	mg/kg	0.36	1	µg/L	0.17	5.8	1,000
	trans-1,2-Dichloroethene	5	mg/kg	0.41	1	µg/L	0.19	14	2,000
	1,1-Dichloroethene	5	mg/kg	0.52	1	µg/L	0.19	42	5,100
	1,2-Dichloropropane	5	mg/kg	0.69	1	µg/L	0.18	0.25	42
cis-1,3-Dichloropropene	5	mg/kg	0.34	1	µg/L	0.14	0.2	29	
trans-1,3-Dichloropropene	5	mg/kg	0.54	1	µg/L	0.19			

Ethylbenzene	5	mg/kg	0.26	1	µg/L	0.17	160	10,000
2-Hexanone	20	mg/kg	0.63	10	µg/L	0.41	n/a	n/a
Isopropylbenzene	5	mg/kg	0.16	1	µg/L	0.13	140	10,000
Methyl acetate	10	mg/kg	1.4	10	µg/L	0.38	n/a	n/a
Methylcyclohexane	10	mg/kg	0.31	1	µg/L	0.13	n/a	n/a
Methylene chloride	5	mg/kg	0.67	1	µg/L	0.33	1.8	380
4-Methyl-2-pentanone	20	mg/kg	0.54	10	µg/L	0.32	75	8,200
Methyl tert-butyl ether	20	mg/kg	0.43	5	µg/L	0.17	3.2	720
Styrene	5	mg/kg	0.15	1	µg/L	0.11	720	20,000
1,1,2,2-Tetrachloroethane	5	mg/kg	0.34	1	µg/L	0.18	0.11	14
Tetrachloroethene	5	mg/kg	0.52	1	µg/L	0.29	0.64	55
Toluene	5	mg/kg	0.27	1	µg/L	0.13	96	8,200
1,2,4-Trichlorobenzene	5	mg/kg	0.27	1	µg/L	0.15	77	1,000
1,1,1-Trichloroethane	5	mg/kg	0.56	1	µg/L	0.22	280	29,000
1,1,2-Trichloroethane	5	mg/kg	0.39	1	µg/L	0.27	0.3	50
Trichloroethene	5	mg/kg	0.42	1	µg/L	0.17	0.35	31
Trichlorofluoromethane	5	mg/kg	0.34	1	µg/L	0.21	540	31,000
1,1,2-Trichloro-1,2,2-trifluoroethane	5	mg/kg	1.3	1	µg/L	0.28	n/a	n/a
Vinyl chloride	5	mg/kg	0.39	1	µg/L	0.22	0.027	4
Xylenes (total)	10	mg/kg	0.67	2	µg/L	0.28	170	20,000

<sup>(1)</sup>Industrial Default Closure Level: IDEM RISC Technical Guide, January 31, 2006, Appendix 1 (Revised). May 1, 2009). Note: Project-specific (analyte concentrations) may be less-stringent (i.e. allow greater concentrations) than the IDEM Industrial Default Closure Level.

**Table 2: Sample Containers, Preservation Techniques, and Holding Times**

<b>Analytes</b>	<b>Analytical Method</b>	<b>Container for Soil Sample</b>	<b>Preservation</b>	<b>Maximum Holding Time</b>
VOCs (Soil)	EPA 5035 / 8260B	G; One 4-Ounce Jar and Three 1-gram vials	Cool, 4° C, Methanol and Sodium Bisulfate	14 days
Metals (Soil)	EPA 6010B	G, 8-Ounce Jar	Cool, 4° C	6 months
Cyanide (Soil)	EPA 9012	Included with containers for metals; no separate containers needed		14 days
Mercury (Soil)	EPA 7471A	Included with containers for metals; no separate containers needed		28 days
TOC (Soil)	EPA 9060A	Included with containers for metals; no separate containers needed		28 days
Total Metals (Groundwater)	EPA 6010B	P, 1000 mL	Cool, 4° C, Nitric acid	6 months
Cyanide (Groundwater – Total)	EPA 9012	Included with containers for total metals; no separate containers needed		14 days
General Minerals (Groundwater - Total)	EPA Method(s)	Included with containers for total metals; no separate containers needed		
TOC (Groundwater)	EPA 9060A	125 mL Amber Glass or HDPE bottle	Cool, 4° C, Hydrochloric acid or Sulfuric acid	28 days
Dissolved Metals (Field Filtered Groundwater)	EPA 6010B	P, 1000 mL	Cool, 4° C, Nitric acid	6 months

Cyanide (Groundwater – Dissolved)	EPA 9012	Included with containers for dissolved metals; no separate containers needed	14 days
General Minerals (Groundwater - Dissolved)	EPA Method(s)	Included with containers for dissolved metals; no separate containers needed	

**Notes:**

G-TLS: Glass with Teflon-lined Septum

G-TLC: Glass with Teflon-lined Cap

P: Polyethylene

## **APPENDICES**

**APPENDIX A**  
**LABORATORY SOPs**  
**(RESERVED)**

1. **TestAmerica-North Canton SOP #CORP-MS-0002NC, Rev. 2.12: "*Determination of Volatile Organics by GC/MS 8260B*".**
2. **TestAmerica-North Canton SOP #CORP-MT-0001NC, Rev.3.4:"*Inductively Coupled Plasma-Atomic Emission Spectroscopy, Spectrometric Method for Trace Element Analysis Update III 6010B*".**
3. **TestAmerica-North Canton SOP #CORP-MT-0007NC, Rev.2.6:"*Mercury in Solid Samples by Cold Vapor Atomic Absorption (Pre and Analysis) SW846 7471A*".**
4. **TestAmerica-North Canton SOP #NC-WC-0017, Rev.2.4: "*Carbon, Total Organic SW9060*".**
5. **TestAmerica-North Canton SOP #NC-WC-0032, Rev.8.4: "*Cyanide, Preparation Method SW9012A*".**
6. **TestAmerica-North Canton: "*Laboratory Quality Manual for TestAmerica North Canton, Rev. 5.0, July 16, 2007*".**

## **APPENDIX B**

### **ANALYTICAL DATA EDD SPECIFICATION**

**DuPont Lab Network  
Envista EDD Specification**

**Version 1.0a**

**May 2, 2005**

Revision History:

Version 1.0, April 23, 2003, original version

Verions 1.0a, May 2, 2005, added TIC explanation

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## **Introduction**

The DuPont Corporate Remediation Group (CRG) maintains a corporate environmental database (Envista) that stores field data, analytical results, QA/QC results, water levels, and other information resulting from the activities of the DuPont environmental projects. Much of this data is provided by analytical labs or sampling contractors performing analytical and sampling services for DuPont. To optimize loading data generated by these contractors, a format of an ASCII text file has been developed for conveying data to DuPont for loading into the database. These text files will be referred to as Envista EDD files. Following is a description of the Envista EDD specification.

## **General Information**

Envista EDD files are electronically submitted to CRG in an agreed upon manner. The EDD must match the hardcopy report in terms of samples, tests, analytes, and results. Also, DuPont requires the lab composite results such that only one result is reported for each analyte (i.e., the lab submits only the result judged best when a sample is re-analyzed for particular analytes due to exceeding calibration range, etc.)

Normally, all data for a particular sample delivery group will be contained in one file. This group is normally referred to as a lot (or group), which makes up a normal reporting/invoicing group and usually consists of samples for a given project and site that the lab has received in one day, including all associated QC samples and results. Note that QC results may be contained in more than one EDD if field samples from different lots were analyzed in the same QC batch.

All data must be written in text format (ASCII). Each data field within a record must be delimited by the caret (^) symbol. Therefore, each record must begin with a ^. If another format is required, arrangements must be made with the DuPont Envista database administrator and another format will be provided. This format must be agreed upon between the lab and DuPont prior to the delivery of the data to DuPont.

Some data fields are required to be populated, while others are populated depending on the project circumstances or the particular data being reported. These requirements are described in the "When Required" column of the EDD specification in Table 1. The length of each field must not exceed the width specified in the "Width" column of the EDD specification in Table 1, or the data will be truncated. Fields designated as a number (N) in the "Width" column of Table 1 must contain a text string that will convert to a number. The record format of the deliverable is positional and therefore, each field must be listed in the order specified in Table 1. Also, null or blank fields must be delimited. For example, if MDL was not applicable to a sample, the field would be designated with a ^^ indicating the MDL was null. Each field begins with a ^ and ends with a ^, but the trailing ^ also becomes the beginning ^ for the next field. Missing data, truncated data, or improperly ordered fields within a record may result in the deliverable being judged to be incomplete.

There is only one type of record, and all records must be the same format (i.e., flat file format). Note that this is changed from the previous DuPont CED EDD specification.

Note that different laboratory samples (samples with different Lab\_IDs) may come from the same field sample. This is preferable for results that are from different lab samples that may have the same parent field sample, such as composited results from different dilutions.

Samples taken for matrix spike/matrix spike duplicates (MS/MSD) and laboratory replicates (REP) are QC samples that have field samples. If the field sample is from DuPont and is in the current lot for the current project, the parent or unspiked sample and result information should be included in the EDD and the Field\_Sample\_ID for the MS, MSD, and REP should be included for those records. If the parent field sample is not from a DuPont site or is from a DuPont site but not the current site and project, the field sample and result should not be included, and the field sample name will be null for the MS, MSD, and REP. Lab originated (QA/QC) samples such as lab control spikes or method blanks will not have a field sample information (field sample ID, date and time sampled, etc.).

The Batch Number is a unique number that identifies the laboratory QC batch. Note that this is changed from the previous DuPont CED EDD specification.

QA/QC results involving relative percent recoveries and relative percent differences, e.g. MS/MSDs, REPs, lab control spikes and lab control spike duplicates (LCS/LCSD), and surrogates must also include these recoveries and differences plus the maximum and minimum recoveries and differences that are acceptable, as applicable. For example, an MS sample requires a result, the relative percent recovery, and the maximum and minimum permissible relative percent recovery. An MSD sample requires a result, the relative percent recovery, the relative percent difference, the maximum and minimum permissible relative percent recovery, and the maximum permissible relative percent difference (see Table 2).

DuPont will no longer require the laboratories to comment on items already flagged in the hardcopy report. For example, laboratories will not be required to comment on poor matrix spike/matrix spike duplicate recoveries, poor laboratory control sample/control sample duplicate recoveries, poor surrogate recoveries, and method blank contamination (if flagged in the hardcopy report).

Laboratories will be required to comment on issues not flagged in the hardcopy report. For example, if samples had to be reextracted/redigested/reanalyzed for any reason, hold times missed, sample was reextracted due to poor surrogate recovery and outcome of reanalysis, sample received without correct preservation, not enough volume to perform matrix spike/matrix spike duplicate samples, etc., laboratories will provide a comment on the analysis report or in the case narrative. Note that comments and/or case narratives should also be included electronically in the comment field, or may be submitted as a separate electronic file in an agreed upon format.

**15.1 Table 1. DuPont Envista EDD flat file field format**

<b>Field Name</b>	<b>When Required</b>	<b>Maximum Length (C=Character, N=number)</b>	<b>Description</b>
Lot_ID	All Records	C30	Identifier for the lot (group of samples that came lab receives in same shipment, and is the typical EDD/hardcopy report/invoice unit)
Lab_ID	All Records	C30	ID used to identify the sample at the lab
Field_Sample_ID	All Field samples (FS, TB, FB, EB) and MS/MSD/REP when parent is DuPont sample for project	C60	Field sample ID or Client ID (normally from chain of custody)
Sample_Type	All Records	C30	Designates the type of sample as a Field Sample (FS), Equipment Blank (EB), Field Blank (FB), or Trip Blank (TB), Matrix Spike (MS), Matrix Spike Duplicate (MSD), Lab Control Spike (LCS), Lab Control Spike Duplicate (LCSD), Lab Duplicate (REP), Method Blank (MB)
Collection_date	Field samples (FS, TB, FB, EB) only	C9	Date sample was collected (Format is DD- MMM-YY, e.g. 15-JAN-97)
Collection_time	Field samples (FS, TB, FB, EB) only	C4	Time sample was collected (Format is HHMM military time, e.g., 1:30 p.m. is 1330, 9:30 a.m. is 0930)
Receipt_date	Field samples (FS, TB, FB, EB) only	C9	Date received at the lab (Format is DD- MMM-YY, e.g. 15-JAN-97)
Sample_Matrix	All Records	C30	Matrix of the sample (Water, soil, sediment, air, oil...) as collected
Lab_Name	All Records	C30	The name or code for the lab (these will be assigned by DuPont for each lab)
Project_Name	All Records	C30	Name assigned to the project

Sample_comments	As applicable	C600	Lab comments regarding handling of samples (e.g. Sample came in above temperature.) Note that comments may be provided as a separate electronic file in an agreed upon format.
Batch_ID	All Records	C30	Unique ID that identifies the group of samples prepared & analyzed together (QC batch)
Analyte_name	All Records	C60	Compound or sample property tested for.
CAS_No	All Records	C30	Chemical Abstract number of the analyte or lab assigned number (without dashes preferred).
Result_Mod	See Table 2	C30	"<" if result is non-detect, otherwise null
Result	See Table 2	C20	Result of an analysis. If non-detect, use reporting limit; either PQL or MDL as specified by the project. For high-resolution isotope dilution methods, use EDL for non-detects.
PQL	See Table 2	C20	Practical Quantitation Limit for an analysis in same units as result, adjusted for sample amount and dilution. For high-resolution isotope dilution methods, use EDL.
MDL	See Table 2	C20	Method Detection Limit for an analysis in same units as result, adjusted for sample amount and dilution. For high-resolution isotope dilution methods, this would be null.
Reporting_Units	See Table 2	C30	Units that the analysis is reported in (mg/l, ug/kg, etc.)
Upper_Error	As applicable	C20	Upper error range (e.g., for rad data, + error measurement)
Lower_Error	As applicable	C20	Lower error range (e.g., for rad data, - error measurement)
Qualifiers	As applicable	C30	Flags applied to the analysis to qualify the data.
Dilution_Factor	All Records	N20	Sample dilution factor. If not diluted, enter one (1).
Analysis_Method	All Records	C30	Method used to run an analysis
Analysis_Date	All Records	C9	Date that the analysis was run (Format is DD- MMM-YY, e.g. 15-JAN-97)

Analysis_Time	All Records	C4	Time that the analysis was run (Format is HHMM military time. e.g. 1:30 p.m. is 1330, 9:30 a.m. is 0930)
Prep_Method	When prep performed	C30	Method used to prep an analysis (if prep method = analysis method, then this should be 'METHOD' without the quotes, or can be null).
Prep_Date	When prep performed	C9	Date that the sample was prepared. (Format is DD-MMM-YY, e.g. 15-JAN-97)
Prep_Time	When prep performed	C4	Time that the sample was prepared (Format is HHMM military time. e.g. 1:30 p.m. is 1330, 9:30 a.m. is 0930)
Preprep_Method	When preprep performed	C30	Method used to preprep/leach an analysis (e.g., 1310, 1311, 1312).
Preprep_Date	When preprep performed	C9	Date that the sample was prepreped (Format is DD-MMM-YY, e.g. 15-JAN-97)
Preprep_Time	When preprep performed	C4	Time that the sample was prepreped (Format is HHMM military time. e.g. 1:30 p.m. is 1330, 9:30 a.m. is 0930)
Analyte_Type	All Records	C30	Target analyte (FS), Surrogate (SU), tentatively identified compound (TIC) or Internal Standard (IS)
Filtered	All Records	C1	Total (T) or Dissolved (D)
Dry_wet_basis	All Records	C2	D for dry weight basis, W for wet weight basis, NS applicable (air, wipe, etc.)
Instrument	All Records	C30	Lab defined identifier for instrument on which analysis was performed.
TIC_number	For TIC results	N2	Tentatively identified compound number beginning with 1 and consecutively numbered to include all TIC's found in the sample. If no TICs are found, can either submit 1 TIC result with ND as result, or not include TIC result record
Spike_added	See Table 2	N20	Amount of the analyte spiked into a quality control sample, in same units as result
RPR	See Table 2	N20	Relative percent recovery. For MS/MSD, if concentration in unspiked parent sample > 4x spike

			amount, RPR should be null and enter NC as qualifier. For surrogates, if dilution factor > 4, RPR should be null, and enter NC as qualifier.
Min_RPR	See Table 2	N20	Lowest recovery limit acceptable for the method
Max_RPR	See Table 2	N20	Highest recovery limit acceptable for the method
RPD	See Table 2	N20	Relative percent difference between duplicate sample types (sample & REP, MS & MSD, LCS & LCSD). For MSD, if concentration in unspiked parent sample > 4x spike amount, RPD should be null and enter NC as qualifier.
Max_RPD	See Table 2	N20	Highest relative percent difference allowed for the method/analyte
Initial_weight_volume	Optional	N18	Initial sample weight or volume before any preps or prepreps
Initial_weight_volume_units	If initial weight/volume included	C30	Units for initial sample weight/volume
Final_weight_volume	Optional	N18	Final sample weight/volume after any preps or prepreps
Final_weight_volume_units	If final weight/volume included	C30	Units for final sample weight/volume
DuPont_Cost_Code	Optional	C30	The DuPont cost code (specifies method/matrix/deliverable/turnaround time) from Exhibit B of the current contract. This is currently optional, but will be required in the future.
Result_Comments	As applicable	C600	Any result specific comments. Note that comments may be provided as a separate electronic file in an agreed upon format.
Fraction	All Records	C30	This field is used to differentiate laboratory samples and results as required. For example, some labs use the LabID (2 <sup>nd</sup> field in this list) to identify the client field sample, which does not sufficiently differentiate lab samples and results from different dilutions. This field could also be a more specific internal Lab ID



## Explanation for Tentitively Identified Compounds (TICs)

The EDD flat file format can accommodate a variety of TIC analysis data that may seem confusing. Results from TIC analyses must be handled differently than Target analyses. In order for the importer to determine that a result is a product of a TIC analysis from that of a Target Analyte, certain triggers must be employed.

The following rules are a summary of how the Labs should report a TIC analysis in the EDD. Any variation from these results will constitute an error and subsequently delay loading the EDD into Envista. The rules below do not supercede the rules explained in the EDD flat file format Spec, but these rules are additionally required in order to flag a TIC analysis and differentiate it from a Target Analyte analysis.

16.0 EDD FIELD NAME	17.0 CRITERIA	18.0 ACCEPTABLE FIELD VALUE
Analyte_Type	Always	TIC
TIC_Number	Always	> 0 i.e. 1,2,3...99. For No TICs found, use 1
Result_Mod	Non Detected analyte result	<
	Detected analyte result	Null
Result	Non Detected analyte result	ND
	Detected analyte result	Numeric Value
Qualifiers	Non Detected analyte result	Null
	Detected analyte result	J or other char that qualifies result
MDL	For MDL jobs	NS
PQL	Always	NS
CAS_No	TIC detected but not identified	Null
	TIC detected and identified	The casno associated with the Analyte.

16.0 EDD FIELD NAME	17.0 CRITERIA	18.0 ACCEPTABLE FIELD VALUE
	Library Scan Analysis performed but no analytes found.	Null
Analyte_Name	TIC detected but not identified	Unknown
	TIC detected and identified	The Analyte Name Identified.
	Library Scan Analysis performed but no analytes found.	No TICs found.

Below are some examples of typical TIC requests and analyses results:

### **NON DETECTED TICs**

If a TIC analysis required a full library scan of analytes:

Qualifier = Null; Result\_Mod = "<"; Result = "ND"; Analyte\_Name = "No TICs Found";  
Casno = Null; TIC\_Number = 1

If a tic analysis was requested for a particular compound:

Qualifier = Null; Result\_Mod = "<"; Result = ND; Analyte\_Name = The name of the tentatively

Identified analyte; Casno = The casno for the tentatively identified analyte; TIC\_Number = sequential number for each TIC

### **DETECTED TICs**

If a TIC analysis identified a particular compound:

Qualifier = "J"; Result\_Mod = null; Result = Numeric Value; Analyte\_Name = The name of the tentatively identified analyte; Casno = The casno for the tentatively identified analyte; TIC\_Number = sequential number for each TIC

If a tic analysis could not identify a particular compound:

Qualifier = "J"; Result\_Mod = null; Result = Numeric Value; Analyte\_Name = "Unknown";  
Casno = Null; TIC\_Number = sequential number for each TIC

**ATTACHMENT 1**

**DUPONT CRG PROCEDURES FOR COMPLETING  
CHAIN-OF-CUSTODY FORMS**

**APPENDIX C  
SOIL MANAGEMENT AND SAMPLING  
TECHNICAL MEMORANDUM DATED MAY 6, 2012,  
AND THE USEPA COMMENTS DATED JUNE 2012**



## TECHNICAL MEMORANDUM

August 23, 2012

Subject: Buffer Zone Interim Remedial Measures  
Soil Excavation and Management  
DuPont East Chicago Site  
East Chicago, Indiana

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E.I. du Pont de Nemours and Company (DuPont) is implementing Interim Remedial Measures (IRMs) at the East Chicago Site as part of the corrective action program under the Resource Conservation and Recovery Act (RCRA). The IRM activities when completed will be part of the overall corrective action for the site to address the potential impacts from the presence of chemical constituents of concern (COC) in the soil. This memorandum describes:

- The extent and location of IRM activities;
- Management of excavated soil, including determination of threshold concentrations indicative of areas where excavated soil may require management as a potentially hazardous solid waste;
- Soil storage location and engineering measures to prevent soil dispersal and contaminant migration; and
- Post-excavation sampling and monitoring.

### 1. INTERIM REMEDIAL MEASURES DESCRIPTION

The approximately 410-acre DuPont East Chicago Site discontinued operations in 1986. The western developed area was used mainly for manufacturing purposes, while the northwest and central sections were used as waste management areas. Currently, most of the previously active manufacturing areas have been decommissioned and the production facilities have been removed. The eastern portion of the East Chicago Site, approximately 163 acres, was not developed and retained its original dune/swale geomorphology and associated plant communities. Commonly referred to as the Natural Area, this section of the East Chicago Site is currently managed by The Nature Conservancy for habitat preservation.

IRM measures were developed for implementation in and adjacent to a Buffer Zone that separates the former manufacturing and waste disposal areas from the Natural Area. The IRM objective is to minimize potential contaminant migration into sensitive habitat, and extend coverage of existing high-quality habitat. The IRM entails excavation for removal of soil containing lead, arsenic, cadmium and zinc. Finished grades at the excavation sites will be approximately two feet lower than existing grades and will be contoured to follow natural grade and existing drainage patterns. Clean offsite backfill may be installed to fill to finished grade, as needed. Erosion protection engineering controls will be installed to protect the Natural Area, stockpile areas and excavation areas. This will be an ongoing process during construction; long term erosion protection will be left in place upgradient of the excavation areas.

During construction activities, silt fence or strawbales will be placed both upgradient and downgradient of the excavation area to aid in prevention of soil eroding out of the excavation area and into the Natural Area.

Figure 1 shows excavation site locations. Ten IRM sites were initially proposed covering approximately 20.6 acres of the East Chicago Site (Sites A, B, C, D, E, F, G, G' and H). Subsequently, a data review was conducted on soil samples collected during a field survey of the Natural Area conducted in the fall 2011. The investigation characterized soil and site vegetation conditions in a total of 37 sampling plots. Based on results of this investigation, four additional IRM areas in the vicinity of the Buffer Zone were identified for excavation to reduce the potential soil contaminant migration into the Natural Area from the former manufacturing and waste disposal areas.

The proposed extension of the IRM excavation boundaries was discussed with EPA Region 5 representatives during a site visit conducted on June 5, 2012 to the East Chicago Site. Figure 1 indicates location of a new proposed IRM location (Site I), and three IRM sites where excavation boundaries would be extended (Sites C', D' and H'). Also discussed with the agency was the need to avoid excavation of an approximately 0.5 acre section of Site G' for protection of existing high quality, sensitive habitat. The combined acreage of IRM excavation sites is 22.4 acres, as listed below.

IRM Site	Total (acres)
A	1.37
B	1.99
C	2.37
C' (new)	1.1
D	4.63
D' (new)	0.39
E	2.03
F	4.74
G	1.26
G'	1.1
H	0.75
H' (new)	0.99
I (new)	0.67
<b>Total</b>	<b>22.4</b>

## 2. EXCAVATED SOIL MANAGEMENT

The excavated soil (two foot initial planned excavation depth) will be stockpiled onsite at a central storage location south of the existing solid waste landfill (Figure 1). Existing soil areas have been classified as a potentially hazardous waste or non-hazardous waste for the purpose of storage, based their metals concentration. Potentially hazardous soil will be segregated from non-hazardous on the storage area. Ultimate disposal of the soil will be described in the Corrective Measures Study (CMS).

### Characteristic Hazardous Waste Determination

In order to determine the potential for a solid waste to be considered a characteristic hazardous waste, EPA developed the analytical procedure *Toxicity Characteristic Leaching Procedure (TCLP)*. Test results are the basis to establish maximum acceptable TCLP concentrations for management of soil as a non-hazardous solid waste. EPA specifies TCLP threshold values of 5 mg/L for arsenic, 1 mg/L for cadmium and 5 mg/L for lead. A fact sheet of TCLP methodology and maximum acceptable TCLP concentrations based on analytical results is available at <http://www.ehso.com/cssepa/TCLP.htm>.

Results from previous soil sampling and analysis throughout the East Chicago Site were used to derive empirical threshold concentrations indicative of areas where excavated soil may require management as a hazardous solid waste, based on constituent leachability using the TCLP. The relationships between total and leachable levels of arsenic, cadmium and lead in site soils, described below, were used as the basis for these determinations.

### Soil Concentration – TCLP Regression Analysis

In order to determine the total soil concentrations that could result in a sample exceeding its respective TCLP criteria, empirical linear regression equations were developed from historical total metals sampling of soil concentrations vs. TCLP values at the East Chicago Site. Log-transformed data were used in the analysis.

Table 1 lists sampling data used in the regression analysis. Data distribution diagrams and regression equations are shown in Figure 2. Regression equations from the total concentration-to-TCLP concentration data set from 27 sampling locations (84 samples) at the East Chicago Site were used as the basis to estimate threshold total concentrations with the potential to exceed TCLP criteria, as follows:

#### Cadmium TCLP Threshold

The regression equation for cadmium soil concentration has a high correlation value (n=84, R<sup>2</sup>=0.73):

$$\ln(TCLP, \text{ mg/L}) = 0.9594 * [\ln(\text{soil concentration, mg/kg}) - 5.238]$$

@ 1 mg/L maximum TCLP concentration for cadmium:

$$\text{Threshold soil concentration} = 235 \text{ mg/kg}$$

#### Lead TCLP Threshold

The regression equation for lead soil concentration has a high correlation value (n=84, R<sup>2</sup>=0.74):

$$\ln(TCLP, \text{ mg/L}) = 1.4341 * [\ln(\text{soil concentration, mg/kg}) - 10.487]$$

@ 5 mg/L maximum TCLP concentration for lead:

$$\text{Threshold soil concentration} = 4,606 \text{ mg/kg}$$

#### Arsenic TCLP Threshold

The regression equation for arsenic total and TCLP soil concentration has a low correlation value (n=84, R<sup>2</sup>=0.39):

$$\ln (\text{TCLP, mg/L}) = 0.7484 * [ \ln (\text{soil concentration, mg/kg}) - 7.3315 ]$$

Applying this regression equation to a 5 mg/L maximum TCLP arsenic concentration results in an elevated threshold soil concentration (154,313 mg/kg). The low correlation value is principally due to the presence of over 70% of samples in the dataset with low TCLP values, in many cases at, or near, analytical detection limits. Because TCLP screening addresses the upper end of the data distribution, samples with arsenic TCLP values less than 0.1 mg/L were excluded from the calculation. This more conservative approach results in a substantially better correlation value (n=19, R<sup>2</sup>=0.65), and a lower arsenic threshold soil concentration. Based on the recalculated regression equation, the threshold concentration estimate is as follows:

#### Recalculated Arsenic TCLP Threshold

$$\ln (\text{TCLP, mg/L}) = 0.891 * [ \ln (\text{soil concentration, mg/kg}) - 6.072 ]$$

@ 5 mg/L maximum TCLP concentration for arsenic:

$$\text{Threshold soil concentration} = 5,548 \text{ mg/kg}$$

#### **Soil Excavation at Areas Exceeding TCLP Values**

Figure 3 illustrates the location of historical surface soil samples collected within the IRM sites and adjacent areas, indicating their potential to exceed threshold TCLP values. Table 2 presents analytical data on arsenic, cadmium and lead concentrations at sampling locations located within the ten initially proposed IRM sites. Samples from 8 of those locations exceeded the threshold TCLP for cadmium (235 mg/kg), and one sample exceeded the threshold for arsenic (5,548 mg/kg). The potential threshold for lead (4,606 mg/kg) was exceeded at 20 sampling locations within the initial IRM sites. Two additional samples collected from a location within IRM Site D had lead concentrations approaching the TCLP threshold (co-located samples AOI-4-29 and SPLP-27). At this location, depicted in Figure 3 with a square around the dot, soil will also be considered as potentially hazardous for the purpose of disposal based on the June 5<sup>th</sup> meeting with EPA.

Table 3 presents analytical data for samples collected from the four additional IRM sites proposed. One sample collected from Site D' (NAPLOT-02) and three samples collected from Site H' (NAT-TRENCH-2, NAT-TRENCH-3, and NA-S08) had lead concentrations approaching or above the TCLP threshold value (4,606 mg/kg). Soil collected from those four locations will also be considered as potentially hazardous for the purpose of disposal.

During IRM excavation activities, soils removed from areas where the total constituent concentrations may exceed the TCLP threshold values characteristic of a potentially hazardous will be stockpiled separately from the soils whose total constituent concentrations are below threshold concentrations. Figure 3 depicts the soil storage area which includes a segregated western section for stockpiling of potentially hazardous soil.

Around each sample predicted to potentially exceed TCLP, a 25 by 25 foot square area will be excavated. Confirmation sampling will be conducted along each excavation bottom and sidewall to assess whether the excavation is complete or must be extended further. One confirmation composite sample consisting of five sub-samples will be obtained from each of the 25 foot sidewalls and analyzed for total arsenic, lead, and cadmium to assess whether the excavation of potentially hazardous waste soil is complete for that area. DuPont will document in field daily logs and the final report that the area of excavation for hazardous waste soils was properly performed, and that hazardous soils were segregated from non-hazardous soils.

### **3. SOIL STORAGE AREA**

The soil storage area will be located just west of IRM site D, on an old concrete building foundation and asphalt pavement (Figure 3). This area will be segregated and will contain appropriate run-on and run-off controls to prevent any soils from leaving the area.

The soil storage area for the non-hazardous soils will be prepared by clearing any vegetation which will interfere with the placement of the excavated soil. The perimeter of the paved area for stockpiles will have straw bales placed around it to provide erosion protection. The non-hazardous soil piles will be consolidated, and maintained in order to minimize erosion and provide a stable soil pile. This non-hazardous soil will not have a liner placed under it, nor will it be covered with liner material. After all of the non-hazardous soil has been placed, graded, and consolidated, seed and mulch will be applied to the pile with the specified native seed mix.

In addition to the storage area for the non-hazardous soils, another separate soil storage area will be prepared for storage of soils excavated from the areas designated for excavation of potentially hazardous soils. It is anticipated that there will be less than or equal to approximately 1,000 cubic yards of potentially hazardous soils.

All potentially hazardous soils placed on this storage area will have a liner placed underneath them and be kept covered with puncture-resistance plastic sheeting material suitable to last at least one year to prevent migration of the potentially contaminated soils from the pile. The liner over the potentially hazardous soil will be secured as necessary to avoid water intrusion and to prevent the liner from being dislodged by the wind. The potentially hazardous soil storage area will also have straw bales placed around the area.

The final disposition of soils will be considered in the Corrective Measures Study (CMS) as part of the overall remediation of the East Chicago Site. DuPont may render the hazardous waste soil stockpile non-hazardous using various available treatments performed wholly within the AOC. DuPont may propose treatment technologies for use and submit a plan to EPA to demonstrate that the hazardous waste soil stockpile no longer exhibits the toxicity characteristic for arsenic, cadmium, or lead.

Because of the contiguous nature of many contamination areas resulting from past site operations, all IRM excavation sites and adjacent areas will be addressed as a single overall area of contamination (AOC). Figure 4 depicts the overall site AOC as well as historical contamination areas identified within the East Chicago Site.

#### **4. POST-EXCAVATION SAMPLING**

Post-excavation sampling will be conducted at IRM sites to verify removal of soil contaminant sources. Soil composite samples will be collected from the bottom of the excavation footprint at a rate of four samples per acre, based on discussions with EPA. Figure 5 indicates the general location of sampling locations within each IRM site. Each soil composite sample will be prepared by combining five sub-samples to provide an area-weighted average concentration. A six-inch subsample depth will be used for the excavation floor. Characterization samples will also be collected in the Buffer Zone in areas where no IRM activities are taking place in order to confirm complete spatial coverage of the Buffer Zone area (Figure 6).

The results for metal concentrations from post excavation IRM sampling locations, Buffer Zone characterization samples, and sample locations outside the IRM areas, listed in Table 2, will be evaluated and compared to the final risk-based human health and ecological numbers in the CMS. Additional remediation may be required in the IRM remediation area, Buffer Zone, and/or former manufacturing and waste disposal areas as part of the final remedy for the East Chicago Site based on this risk evaluation.

#### **5. AIR MONITORING AND SAMPLING PLAN**

Excavation, transport, and storage of contaminated soils have the potential to generate airborne dust which could migrate from the active work areas. An air monitoring plan was developed to address site and worker protection associated with concentrations of dust and constituents of concern in the work area. Monitoring will entail sampling over an 8-10 hour period corresponding to a construction day for a representative number of days over the duration of the construction work. The detailed air monitoring plan, developed as part of the Health and Safety Plan (HASP), is provided in Attachment 1.

The target compounds to be sampled are dust (PM<sub>10</sub>) and contaminant metals (arsenic, lead, and cadmium). The PM<sub>10</sub> is the basis for State and National ambient air quality 24-hour particulate standards. To augment the work area sampling, as well as the real-time dust monitoring, meteorological data will be continuously recorded from the beginning to the end of the remediation work using an on-site meteorological monitoring station located in a central area of the Site.

The data collection method consists of time-integrated manual air sampling using an off-site laboratory analysis of PM<sub>10</sub> and PM<sub>10</sub>-METALS. Dust samples will be collected via a low-volume sampling method, coupled with pre- and post-sampling gravimetric analyses of the sample filters. PM<sub>10</sub> sampling will be performed at a single downwind location on a frequency of once per week.

Trace metal concentrations will be determined by combining the low-volume sampling method with USEPA's IO-3 Method (Chemical Species Analysis of Collected Suspended Particulate Matter) for inorganic compounds. The exposed filters will be submitted to a laboratory for chemical analysis of lead, arsenic, and cadmium, and reported as 8 hour integrated averages.

#### **5. DUST CONTROL**

Monitoring for visible airborne dust emissions will be performed continuously during excavation activities. Real-time air monitoring will be performed by the contractor during excavation and material-

handling operations when potential lead, arsenic and cadmium-containing dust may be generated. Engineering controls and dust suppression measures such as spraying water will be implemented to minimize dust and potential exposure.

Real-time measurements for dust will be obtained using personal Data RAM (*p*-DR-1000) or equivalent personal data-logging designed to measure the concentration of airborne particulate matter. The device provides continuous visual readout, electronic recording of the information, and an audible alarm activated at a user-defined level.

Action levels have been established to assess the need for worker's personal protection and safety equipment, dust suppression, and/or temporary work suspension. The various action levels to be adhered to during the IRM are as follows:

- Work zone dust: 2.5 mg/m<sup>3</sup> total dust
- Lead: 0.05 mg/m<sup>3</sup>
- Cadmium PEL: 0.005 mg/m<sup>3</sup>
- Arsenic: 0.01 mg/m<sup>3</sup>

**Table 1**  
**East Chicago Site - Buffer Zone Interim Remedial Measures**  
**Historical Data on Arsenic, Cadmium and Lead Concentration in Soil vs. TCLP values**

Sample Number	Date	Depth (ft)	SOIL (mg/kg)	TCLP * (mg/L)	x=	y=
					Ln SOIL	Ln TCLP
ARSENIC					Ln SOIL	Ln TCLP
RFI2-S1J-4	11/11/2003	0 - 2	62000	160	11.035	5.075
RFI2-S1J-1	11/12/2003	0 - 2	9530	17.7	9.162	2.874
RFI2-S1J-3	11/11/2003	2 - 4	3190	10.4	8.068	2.342
RFI2-S4-4	11/11/2003	2 - 4	15200	7.22	9.629	1.977
RFI2-S1J-3	11/11/2003	4 - 6	3970	6.24	8.287	1.831
RFI2-A2E-3	11/11/2003	0 - 2	3520	3.7	8.166	1.308
RFI2-S1J-3	11/11/2003	0 - 2	985	3.16	6.893	1.151
RFI2-A2E-3	11/11/2003	2 - 4	2410	2.87	7.787	1.054
RFI2-S4-4	11/11/2003	0 - 2	9050	2.81	9.111	1.033
RFI2-S21-1	11/11/2003	6 - 8	102	0.928	4.625	-0.075
RFI2-A2E-1	11/11/2003	2 - 4	966	0.839	6.873	-0.176
RFI2-S1J-2	11/11/2003	4 - 6	629	0.668	6.444	-0.403
RFI2-S21-2	11/11/2003	2 - 4	243	0.544	5.493	-0.609
RFI2-S1J-2	11/11/2003	0 - 2	783	0.442	6.663	-0.816
RFI2-S1J-2	11/11/2003	2 - 4	825	0.366	6.715	-1.005
RFI2-S1J-4	11/11/2003	2 - 4	145	0.306	4.977	-1.184
RFI2-A2E-1	11/11/2003	4 - 6	651	0.271	6.479	-1.306
RFI2-S1J-1	11/12/2003	2 - 4	861	0.21	6.758	-1.561
RFI2-S4-2	11/11/2003	0 - 2	1600	0.191	7.378	-1.655
RFI2-S1J-4	11/11/2003	4 - 6	30.7	0.0966	3.424	-2.337
RFI2-S21-1	11/11/2003	4 - 6	14.8	0.0902	2.695	-2.406
RFI2-A13-1	11/12/2003	0 - 2	246	0.0828	5.505	-2.491
RFI2-A13-2	11/12/2003	0 - 2	1840	0.0599	7.518	-2.815
RFI2-S4-3	11/11/2003	0 - 2	531	0.0564	6.275	-2.875
RFI2-A13-3	11/12/2003	2 - 3	47.4	0.055	3.859	-2.900
RFI2-S21-2	11/11/2003	0 - 2	138	0.0507	4.927	-2.982
RFI2-S1J-1	11/12/2003	4 - 6	81.5	0.0475	4.401	-3.047
RFI2-A2E-2	11/11/2003	0 - 2	47.3	0.0375	3.857	-3.283
RFI2-S4-3	11/11/2003	2 - 4	147	0.0349	4.990	-3.355
RFI2-S21-3	11/11/2003	6 - 8	709	0.0309	6.564	-3.477
RFI2-S3-3	11/10/2003	4 - 6	165	0.0259	5.106	-3.654
RFI2-S3-3	11/10/2003	0 - 2	29.3	0.0243	3.378	-3.717
RFI2-S1J-3	11/11/2003	6 - 8	31.8	0.0223	3.459	-3.803
RFI2-S1J-1	11/12/2003	6 - 8	38.7	0.0207	3.656	-3.878
RFI2-S4-2	11/11/2003	6 - 8	93.1	0.0196	4.534	-3.932
RFI2-A2E-1	11/11/2003	0 - 2	116	0.0174	4.754	-4.051
RFI2-S3-3	11/10/2003	6 - 8	17.8	0.0171	2.879	-4.069
RFI2-A13-1	11/12/2003	2 - 4	4.53	0.0152	1.511	-4.186
RFI2-S21-1	11/11/2003	0 - 2	8.0	0.0145	2.079	-4.234

Sample Number	Date	Depth (ft)	SOIL (mg/kg)	TCLP * (mg/L)	x= Ln SOIL	y= Ln TCLP
<b>ARSENIC (cont.)</b>						
RFI2-A13-2	11/12/2003	2 - 4	400	0.0137	5.991	-4.290
RFI2-S7-4	11/12/2003	2 - 4	1180	0.0137	7.073	-4.290
RFI2-S1J-2	11/11/2003	6 - 8	48.7	0.0123	3.886	-4.398
RFI2-S7-1	11/12/2003	4 - 6	4620	0.0121	8.438	-4.415
RFI2-A13-1	11/12/2003	4 - 5	669	0.012	6.506	-4.423
RFI2-S3-3	11/10/2003	8 - 10	45.2	0.0107	3.811	-4.538
RFI2-S21-2	11/11/2003	8 - 9	162	0.0106	5.088	-4.547
RFI2-S21-2	11/11/2003	4 - 6	223	0.0097	5.407	-4.636
RFI2-S7-1	11/12/2003	0 - 2	1090	0.0088	6.994	-4.733
RFI2-S21-1	11/11/2003	2 - 4	2.36	0.0087	0.859	-4.744
RFI2-S7-2	11/12/2003	0 - 2.5	1510	0.0079	7.320	-4.841
RFI2-S21-3	11/11/2003	0 - 2	237	0.0078	5.468	-4.854
RFI2-S3-4	11/10/2003	2 - 4	92.7	0.0077	4.529	-4.867
RFI2-S4-1	11/11/2003	0 - 2	120	0.0077	4.787	-4.867
RFI2-S21-3	11/11/2003	2 - 4	2910	0.0071	7.976	-4.948
RFI2-S7-1	11/12/2003	2 - 4	473	0.0068	6.159	-4.991
RFI2-A13-3	11/12/2003	0 - 2	31.5	0.0063	3.450	-5.067
RFI2-S3-2	11/10/2003	0 - 2	23.7	0.0061	3.165	-5.099
RFI2-S3-3	11/10/2003	2 - 4	140	0.0058	4.942	-5.150
RFI2-S3-2	11/10/2003	4 - 6	75	0.0053	4.317	-5.240
RFI2-S3-4	11/10/2003	0 - 2	160	0.0052	5.075	-5.259
RFI2-A13-4	11/12/2003	0 - 2	380	0.0049	5.940	-5.319
RFI2-A2E-2	11/11/2003	2 - 4	72.5	0.0049	4.284	-5.319
RFI2-S21-2	11/11/2003	6 - 8	259	0.0049	5.557	-5.319
RFI2-S21-3	11/11/2003	4 - 6	460	0.0049	6.131	-5.319
RFI2-S21-4	11/11/2003	0 - 2	88.2	0.0049	4.480	-5.319
RFI2-S21-4	11/11/2003	2 - 4	43.9	0.0049	3.782	-5.319
RFI2-S21-4	11/11/2003	4 - 6	11.6	0.0049	2.451	-5.319
RFI2-S21-4	11/11/2003	6 - 8	70	0.0049	4.248	-5.319
RFI2-S21-4	11/11/2003	8 - 9	27.5	0.0049	3.314	-5.319
RFI2-S3-1	11/10/2003	0 - 2	48.9	0.0049	3.890	-5.319
RFI2-S3-1	11/10/2003	2 - 4	67.8	0.0049	4.217	-5.319
RFI2-S3-1	11/10/2003	4 - 6	37.6	0.0049	3.627	-5.319
RFI2-S3-2	11/10/2003	2 - 4	160	0.0049	5.075	-5.319
RFI2-S3-4	11/10/2003	4 - 6	105	0.0049	4.654	-5.319
RFI2-S3-4	11/10/2003	6 - 8	3.69	0.0049	1.306	-5.319
RFI2-S4-1	11/11/2003	2 - 4	1600	0.0049	7.378	-5.319
RFI2-S4-1	11/11/2003	4 - 6	192	0.0049	5.257	-5.319
RFI2-S4-1	11/11/2003	6 - 8	23.6	0.0049	3.161	-5.319
RFI2-S4-1	11/11/2003	8 - 10	7.33	0.0049	1.992	-5.319
RFI2-S4-2	11/11/2003	2 - 4	15.2	0.0049	2.721	-5.319
RFI2-S4-2	11/11/2003	4 - 6	19.9	0.0049	2.991	-5.319
RFI2-S7-3	11/12/2003	0 - 2	84.1	0.0049	4.432	-5.319
RFI2-S7-4	11/12/2003	0 - 2	827	0.0049	6.718	-5.319
RFI2-S7-4	11/12/2003	4 - 6	805	0.0049	6.691	-5.319

Sample Number	Date	Depth (ft)	SOIL (mg/kg)	TCLP * (mg/L)	x= Ln SOIL	y= Ln TCLP
<b>CADMIUM</b>						
RFI2-S7-4	11/12/2003	0 - 2	518	5.26	6.250	1.660
RFI2-S3-3	11/10/2003	4 - 6	687	2.66	6.532	0.978
RFI2-S7-3	11/12/2003	0 - 2	38.9	2.55	3.661	0.936
RFI2-S3-4	11/10/2003	6 - 8	88	2.17	4.477	0.775
RFI2-S1J-1	11/12/2003	0 - 2	213	2.11	5.361	0.747
RFI2-S1J-2	11/11/2003	0 - 2	142	1.64	4.956	0.495
RFI2-S3-4	11/10/2003	4 - 6	172	1.64	5.147	0.495
RFI2-A13-2	11/12/2003	2 - 4	568	1.61	6.342	0.476
RFI2-S7-1	11/12/2003	2 - 4	286	1.45	5.656	0.372
RFI2-S7-1	11/12/2003	0 - 2	392	1.42	5.971	0.351
RFI2-S7-4	11/12/2003	4 - 6	75.1	1.41	4.319	0.344
RFI2-S1J-1	11/12/2003	2 - 4	91	1.19	4.511	0.174
RFI2-S1J-2	11/11/2003	2 - 4	107	1.14	4.673	0.131
RFI2-S7-4	11/12/2003	2 - 4	76.4	1.1	4.336	0.095
RFI2-S21-2	11/11/2003	6 - 8	81.4	0.885	4.399	-0.122
RFI2-A13-1	11/12/2003	4 - 5	279	0.788	5.631	-0.238
RFI2-A13-2	11/12/2003	0 - 2	519	0.755	6.252	-0.281
RFI2-S7-2	11/12/2003	0 - 2.5	227	0.728	5.425	-0.317
RFI2-S1J-3	11/11/2003	2 - 4	46.6	0.715	3.842	-0.335
RFI2-S1J-4	11/11/2003	0 - 2	97.6	0.667	4.581	-0.405
RFI2-S21-4	11/11/2003	2 - 4	204	0.627	5.318	-0.467
RFI2-S1J-2	11/11/2003	4 - 6	50	0.61	3.912	-0.494
RFI2-S1J-3	11/11/2003	0 - 2	38.1	0.591	3.640	-0.526
RFI2-S7-1	11/12/2003	4 - 6	305	0.574	5.720	-0.555
RFI2-S21-2	11/11/2003	8 - 9	65.5	0.461	4.182	-0.774
RFI2-A13-1	11/12/2003	0 - 2	39.5	0.412	3.676	-0.887
RFI2-A13-4	11/12/2003	0 - 2	45.3	0.337	3.813	-1.088
RFI2-S1J-1	11/12/2003	6 - 8	14	0.321	2.639	-1.136
RFI2-S21-4	11/11/2003	6 - 8	72.2	0.314	4.279	-1.158
RFI2-S21-1	11/11/2003	6 - 8	26	0.309	3.258	-1.174
RFI2-S3-1	11/10/2003	4 - 6	19.1	0.308	2.950	-1.178
RFI2-S1J-1	11/12/2003	4 - 6	16.7	0.271	2.815	-1.306
RFI2-S21-4	11/11/2003	8 - 9	23.1	0.263	3.140	-1.336
RFI2-S1J-4	11/11/2003	4 - 6	15.6	0.241	2.747	-1.423
RFI2-S3-4	11/10/2003	0 - 2	246	0.215	5.505	-1.537
RFI2-S3-1	11/10/2003	2 - 4	38.5	0.193	3.651	-1.645
RFI2-S3-3	11/10/2003	6 - 8	326	0.191	5.787	-1.655
RFI2-S1J-3	11/11/2003	4 - 6	26.5	0.184	3.277	-1.693
RFI2-S1J-4	11/11/2003	2 - 4	23.7	0.173	3.165	-1.754
RFI2-S21-2	11/11/2003	2 - 4	40.1	0.169	3.691	-1.778
RFI2-S3-4	11/10/2003	2 - 4	21	0.167	3.045	-1.790
RFI2-S3-3	11/10/2003	8 - 10	302	0.163	5.710	-1.814
RFI2-S1J-2	11/11/2003	6 - 8	17.1	0.155	2.839	-1.864

Sample Number	Date	Depth (ft)	SOIL (mg/kg)	TCLP * (mg/L)	x= Ln SOIL	y= Ln TCLP
<b>CADMIUM (cont.)</b>						
RFI2-S21-2	11/11/2003	4 - 6	57.3	0.132	4.048	-2.025
RFI2-A13-1	11/12/2003	2 - 4	7.77	0.117	2.050	-2.146
RFI2-S21-4	11/11/2003	0 - 2	2.97	0.11	1.089	-2.207
RFI2-S1J-3	11/11/2003	6 - 8	6.23	0.081	1.829	-2.513
RFI2-S21-4	11/11/2003	4 - 6	212	0.0743	5.357	-2.600
RFI2-S3-3	11/10/2003	0 - 2	5.67	0.0727	1.735	-2.621
RFI2-S3-2	11/10/2003	4 - 6	7.23	0.0687	1.978	-2.678
RFI2-A2E-3	11/11/2003	0 - 2	1.68	0.0604	0.519	-2.807
RFI2-S21-2	11/11/2003	0 - 2	21.9	0.0561	3.086	-2.881
RFI2-S3-3	11/10/2003	2 - 4	17.6	0.0445	2.868	-3.112
RFI2-S4-2	11/11/2003	4 - 6	49.8	0.0362	3.908	-3.319
RFI2-S3-1	11/10/2003	0 - 2	7.26	0.0321	1.982	-3.439
RFI2-A13-3	11/12/2003	2 - 3	8.15	0.0316	2.098	-3.455
RFI2-S4-4	11/11/2003	2 - 4	13.4	0.0308	2.595	-3.480
RFI2-S4-2	11/11/2003	2 - 4	9.37	0.0297	2.238	-3.517
RFI2-S3-2	11/10/2003	0 - 2	20.3	0.0245	3.011	-3.709
RFI2-S21-3	11/11/2003	6 - 8	57.9	0.0222	4.059	-3.808
RFI2-A2E-1	11/11/2003	2 - 4	2.74	0.0186	1.008	-3.985
RFI2-S4-4	11/11/2003	0 - 2	6.71	0.0181	1.904	-4.012
RFI2-S21-1	11/11/2003	0 - 2	5.68	0.0141	1.737	-4.262
RFI2-S21-3	11/11/2003	4 - 6	13.6	0.014	2.610	-4.269
RFI2-A13-3	11/12/2003	0 - 2	4.66	0.0136	1.539	-4.298
RFI2-S4-3	11/11/2003	0 - 2	2.29	0.0132	0.829	-4.328
RFI2-S4-1	11/11/2003	8 - 10	7.21	0.0131	1.975	-4.335
RFI2-S21-1	11/11/2003	2 - 4	6.94	0.013	1.937	-4.343
RFI2-S3-2	11/10/2003	2 - 4	1.98	0.0127	0.683	-4.366
RFI2-S21-1	11/11/2003	4 - 6	2.3	0.0117	0.833	-4.448
RFI2-A2E-2	11/11/2003	0 - 2	5.39	0.0106	1.685	-4.547
RFI2-A2E-3	11/11/2003	2 - 4	1.31	0.0101	0.270	-4.595
RFI2-S21-3	11/11/2003	2 - 4	4.61	0.0097	1.528	-4.636
RFI2-S4-2	11/11/2003	0 - 2	2.74	0.0097	1.008	-4.636
RFI2-S4-1	11/11/2003	0 - 2	0.979	0.0082	-0.021	-4.804
RFI2-S4-2	11/11/2003	6 - 8	7.65	0.0074	2.035	-4.906
RFI2-A2E-1	11/11/2003	4 - 6	0.976	0.0072	-0.024	-4.934
RFI2-S21-3	11/11/2003	0 - 2	3.47	0.0064	1.244	-5.051
RFI2-A2E-1	11/11/2003	0 - 2	1.56	0.0046	0.445	-5.382
RFI2-S4-1	11/11/2003	2 - 4	1.55	0.0034	0.438	-5.684
RFI2-A2E-2	11/11/2003	2 - 4	0.659	0.00087	-0.417	-7.047
RFI2-S4-1	11/11/2003	4 - 6	1.97	0.00087	0.678	-7.047
RFI2-S4-1	11/11/2003	6 - 8	1.97	0.00087	0.678	-7.047
RFI2-S4-3	11/11/2003	2 - 4	0.0667	0.00087	-2.708	-7.047

Sample Number	Date	Depth (ft)	SOIL (mg/kg)	TCLP * (mg/L)	x= Ln SOIL	y= Ln TCLP
<b>LEAD</b>						
RFI2-S1J-3	11/11/2003	6 - 8	75300	665	11.229	6.500
RFI2-S7-4	11/12/2003	4 - 6	42400	480	10.655	6.174
RFI2-S7-1	11/12/2003	4 - 6	178000	432	12.090	6.068
RFI2-S7-1	11/12/2003	0 - 2	62000	416	11.035	6.031
RFI2-S7-4	11/12/2003	0 - 2	43000	260	10.669	5.561
RFI2-S7-4	11/12/2003	2 - 4	45600	244	10.728	5.497
RFI2-S7-2	11/12/2003	0 - 2.5	138000	182	11.835	5.204
RFI2-A13-4	11/12/2003	0 - 2	25100	159	10.131	5.069
RFI2-A13-2	11/12/2003	2 - 4	36600	122	10.508	4.804
RFI2-S1J-1	11/12/2003	0 - 2	58300	107	10.973	4.673
RFI2-S1J-2	11/11/2003	6 - 8	9540	98.1	9.163	4.586
RFI2-A13-1	11/12/2003	4 - 5	30300	71.7	10.319	4.272
RFI2-S7-1	11/12/2003	2 - 4	35500	53.6	10.477	3.982
RFI2-S1J-1	11/12/2003	4 - 6	4980	40.3	8.513	3.696
RFI2-S1J-1	11/12/2003	6 - 8	2490	39.4	7.820	3.674
RFI2-S3-1	11/10/2003	4 - 6	9890	34.7	9.199	3.547
RFI2-S1J-4	11/11/2003	2 - 4	6010	27.3	8.701	3.307
RFI2-S3-3	11/10/2003	4 - 6	3730	27.2	8.224	3.303
RFI2-S3-1	11/10/2003	0 - 2	5000	26	8.517	3.258
RFI2-S1J-4	11/11/2003	4 - 6	2280	23	7.732	3.135
RFI2-S21-2	11/11/2003	8 - 9	1460	22.6	7.286	3.118
RFI2-S3-1	11/10/2003	2 - 4	28500	22.2	10.258	3.100
RFI2-A13-2	11/12/2003	0 - 2	54800	21.1	10.911	3.049
RFI2-S1J-3	11/11/2003	0 - 2	5240	20.6	8.564	3.025
RFI2-S1J-2	11/11/2003	4 - 6	8240	20.2	9.017	3.006
RFI2-S1J-3	11/11/2003	2 - 4	14600	19.9	9.589	2.991
RFI2-S21-2	11/11/2003	6 - 8	2000	19.9	7.601	2.991
RFI2-S1J-2	11/11/2003	2 - 4	21500	19.8	9.976	2.986
RFI2-S1J-1	11/12/2003	2 - 4	22600	19.3	10.026	2.960
RFI2-S1J-2	11/11/2003	0 - 2	13000	18.9	9.473	2.939
RFI2-S7-3	11/12/2003	0 - 2	6760	18.6	8.819	2.923
RFI2-S21-2	11/11/2003	4 - 6	2770	17.2	7.927	2.845
RFI2-S21-3	11/11/2003	6 - 8	2390	17	7.779	2.833
RFI2-S3-2	11/10/2003	4 - 6	1590	15	7.371	2.708
RFI2-S1J-3	11/11/2003	4 - 6	10200	9.92	9.230	2.295
RFI2-S3-4	11/10/2003	0 - 2	13700	9.39	9.525	2.240
RFI2-S3-4	11/10/2003	4 - 6	2940	9.23	7.986	2.222
RFI2-A13-1	11/12/2003	0 - 2	3160	8.84	8.058	2.179
RFI2-S3-3	11/10/2003	6 - 8	973	7.22	6.880	1.977
RFI2-S21-3	11/11/2003	0 - 2	2630	6.47	7.875	1.867
RFI2-S3-3	11/10/2003	8 - 10	1590	5.49	7.371	1.703

Sample Number	Date	Depth (ft)	SOIL (mg/kg)	TCLP * (mg/L)	x= Ln SOIL	y= Ln TCLP
<b>LEAD (cont.)</b>						
RFI2-S1J-4	11/11/2003	0 - 2	13300	4.3	9.496	1.459
RFI2-S4-4	11/11/2003	0 - 2	3300	4.06	8.102	1.401
RFI2-A2E-1	11/11/2003	2 - 4	2910	2.59	7.976	0.952
RFI2-S21-4	11/11/2003	4 - 6	1320	2.52	7.185	0.924
RFI2-S21-3	11/11/2003	2 - 4	7000	1.96	8.854	0.673
RFI2-S3-4	11/10/2003	2 - 4	1390	1.81	7.237	0.593
RFI2-A2E-3	11/11/2003	0 - 2	5670	1.2	8.643	0.182
RFI2-S21-1	11/11/2003	6 - 8	496	0.939	6.207	-0.063
RFI2-A2E-3	11/11/2003	2 - 4	268	0.85	5.591	-0.163
RFI2-A2E-1	11/11/2003	4 - 6	714	0.83	6.571	-0.186
RFI2-S21-2	11/11/2003	0 - 2	4500	0.77	8.412	-0.261
RFI2-S4-2	11/11/2003	0 - 2	6750	0.459	8.817	-0.779
RFI2-S21-2	11/11/2003	2 - 4	2760	0.435	7.923	-0.832
RFI2-A2E-2	11/11/2003	0 - 2	425	0.423	6.052	-0.860
RFI2-A13-1	11/12/2003	2 - 4	171	0.397	5.142	-0.924
RFI2-S3-3	11/10/2003	0 - 2	389	0.356	5.964	-1.033
RFI2-S21-3	11/11/2003	4 - 6	1490	0.336	7.307	-1.091
RFI2-S21-4	11/11/2003	8 - 9	353	0.291	5.866	-1.234
RFI2-S21-1	11/11/2003	4 - 6	331	0.224	5.802	-1.496
RFI2-S3-2	11/10/2003	0 - 2	1050	0.191	6.957	-1.655
RFI2-S4-4	11/11/2003	2 - 4	4320	0.188	8.371	-1.671
RFI2-S21-4	11/11/2003	6 - 8	968	0.127	6.875	-2.064
RFI2-S21-1	11/11/2003	0 - 2	156	0.125	5.050	-2.079
RFI2-A13-3	11/12/2003	2 - 3	614	0.12	6.420	-2.120
RFI2-S21-1	11/11/2003	2 - 4	218	0.111	5.384	-2.198
RFI2-S21-4	11/11/2003	0 - 2	1330	0.0999	7.193	-2.304
RFI2-S4-1	11/11/2003	0 - 2	312	0.0838	5.743	-2.479
RFI2-S4-1	11/11/2003	2 - 4	546	0.0651	6.303	-2.732
RFI2-S21-4	11/11/2003	2 - 4	483	0.0635	6.180	-2.757
RFI2-A2E-2	11/11/2003	2 - 4	367	0.0577	5.905	-2.852
RFI2-S4-3	11/11/2003	0 - 2	826	0.0558	6.717	-2.886
RFI2-S3-3	11/10/2003	2 - 4	1480	0.0538	7.300	-2.922
RFI2-A13-3	11/12/2003	0 - 2	456	0.0404	6.122	-3.209
RFI2-S4-1	11/11/2003	8 - 10	391	0.0196	5.969	-3.932
RFI2-S3-4	11/10/2003	6 - 8	45.2	0.0181	3.811	-4.012
RFI2-S4-2	11/11/2003	2 - 4	186	0.0167	5.226	-4.092
RFI2-S3-2	11/10/2003	2 - 4	217	0.0162	5.380	-4.123
RFI2-A2E-1	11/11/2003	0 - 2	277	0.0093	5.624	-4.678
RFI2-S4-1	11/11/2003	4 - 6	529	0.0093	6.271	-4.678
RFI2-S4-1	11/11/2003	6 - 8	460	0.0093	6.131	-4.678
RFI2-S4-2	11/11/2003	4 - 6	548	0.0093	6.306	-4.678
RFI2-S4-2	11/11/2003	6 - 8	47.9	0.0093	3.869	-4.678
RFI2-S4-3	11/11/2003	2 - 4	144	0.0093	4.970	-4.678

\* Highlighted samples exceed EPA's Toxicity Characteristic Leaching Procedure (TCLP) limits of 5 mg/L for arsenic and lead, and 1 mg/L for cadmium.

**Table 2**  
**Buffer Zone Interim Remedial Measures (IRM)**  
**Historical Soil Samples and Potential TCLP Exceedance**

IRM Area	Sample	Depth (ft)	Soil Concentration (mg/kg) *			Risk Assessment Area	Sampling Phase
			Arsenic	Cadmium	Lead		
A	BFZ-SS-3	0 - 0.5	33.2	43.7	2640	Buffer Zone	CMS FOLLOW-UP SOILS 2010
A	GRD-SS-2	0 - 0.5	14.2	21.3	1260	Buffer Zone	CMS FOLLOW-UP SOILS 2010
B	BFZ-28	0 - 0.5	6.6	0.31	443	Buffer Zone	CMS SOILS SAMPLING 2009
B	BFZ-28	0.5 - 1	18.9	3.9	55.4	Buffer Zone	CMS SOILS SAMPLING 2009
B	BFZ-29	0 - 0.5	157	111	11300	Buffer Zone	CMS SOILS SAMPLING 2009
B	BFZ-29	1 - 1.5	44.4	34	4880	Buffer Zone	CMS SOILS SAMPLING 2009
B	BFZ-30	0 - 0.5	12.2	16	841	Buffer Zone	CMS SOILS SAMPLING 2009
B	BFZ-30	0.5 - 1	30.1	20.2	1680	Buffer Zone	CMS SOILS SAMPLING 2009
B	BFZ-31	0.5 - 1	833	295	57600	Buffer Zone	CMS SOILS SAMPLING 2009
B	BFZ-31	0 - 0.5	25.2	6.6	1230	Buffer Zone	CMS SOILS SAMPLING 2009
B	NA-36	0 - 0.5	3.1	1.9	61.5	IRM outside BZ	EI DATA GATHERING
B	NAGR-25	0 - 0.5	4.2	0.1	3	Buffer Zone Extended	CMS FOLLOW-UP SOILS 2010
B	S1C-04S	0 - 2	107	8.88	1190	Buffer Zone	PHASE I RFI
C	AOI-4-32	0 - 0.5	31.4	8.3	657	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-32	1 - 1.5	12.2	4.1	93	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-33	0 - 0.5	240	23.8	1110	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-33	1 - 2	61.3	39.4	2190	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-34	0 - 0.5	107	7.4	3260	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-34	1 - 2	123	14.4	8780	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-35	0 - 0.5	127	33.5	2070	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-36	0 - 0.5	17	40.3	405	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-36	1 - 2	71.4	1.4	2490	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-38	0 - 0.5	96.1	83.1	2120	IRM outside BZ	CMS SOILS SAMPLING 2009
C	AOI-4-38	1 - 1.5	432	486	24500	IRM outside BZ	CMS SOILS SAMPLING 2009
C	BERA-RNOF06-01	0 - 1	5.8	5.44	154	Buffer Zone	BERA SOIL SAMPLING 1/06
C	BERA-RNOF06-01	1 - 2	7.5	9.28	77	Buffer Zone	BERA SOIL SAMPLING 1/06
C	BERA-RNOF06-02	0 - 1	18	21.5	850	Buffer Zone Extended	BERA SOIL SAMPLING 1/06
C	BERA-RNOF06-02	1 - 2	13.9	45.5	364	Buffer Zone Extended	BERA SOIL SAMPLING 1/06
C	BFZ-26	0 - 0.5	58.9	7.8	1830	Buffer Zone	CMS SOILS SAMPLING 2009
C	BFZ-27	0 - 0.5	51.3	19.2	1980	Buffer Zone	CMS SOILS SAMPLING 2009
C	BFZ-27	1 - 1.5	45.9	26.8	935	Buffer Zone	CMS SOILS SAMPLING 2009
C	NA-24	0 - 0.5	145	17.9	380	IRM outside BZ	EI DATA GATHERING
C	S1C-01S	0 - 2	0.65	0.96	50	IRM outside BZ	PHASE I RFI
C	S1C-02S	0 - 2	7.9	39.7	149	IRM outside BZ	PHASE I RFI
C	S1C-02U	2 - 3	0.6	1.73	688	IRM outside BZ	PHASE I RFI
C	S1C-03S	0 - 2	268	15.6	3390	Buffer Zone	PHASE I RFI
D	AOI-4-13	0 - 0.5	45.1	32.9	5870	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-16	0 - 0.3	280	25.1	1690	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-18	0.5 - 1	9.4	0.65	181	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-18	0.5 - 1	13.2	0.5	136	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-18	0 - 0.5	32.6	1.7	421	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-21	0 - 0.5	44.6	33.2	1280	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-23	0 - 0.5	4.7	0.02	6	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-23	0.5 - 1	112	0.02	0.99	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-24	0 - 0.5	278	8.5	47400	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-24	0.5 - 1	38.7	16.1	1140	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-25	0 - 0.5	206	13.1	20800	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-25	0.5 - 1	479	5.4	62000	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-26	0.5 - 1	6.9	2	51.2	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-26	0 - 0.5	10.3	5.2	145	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-27	0 - 0.5	49.5	48.1	1260	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-27	0.5 - 1	22.5	20.5	1050	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-29	1 - 2	79	22	4040 **	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-29	0 - 0.5	28.3	9	1060	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-30	0 - 0.5	78.7	7.9	2030	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-30	0.5 - 1	54.9	5.5	684	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-31	0 - 0.5	66.8	4.9	3180	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-31	0.5 - 1	35.1	8.2	1770	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-40	0 - 0.5	106	9.7	1080	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
D	AOI-4-40	1 - 2	111	7	773	IRM outside BZ	CMS FOLLOW-UP SOILS 2010

Table 2 (cont.)

IRM Area	Sample	Depth (ft)	Soil Concentration (mg/kg) *			Risk Assessment Area	Sampling Phase
			Arsenic	Cadmium	Lead		
D	AOI-4-40	1 - 2	155	5.3	908	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
D	AOI-4-7	1 - 1.5	55400	146	129000	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-7	0 - 0.5	144	12.8	1340	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-8	0 - 0.5	290	16.3	3880	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-8	1 - 1.5	56.4	3.5	1190	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-9	0 - 0.5	335	10	3080	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-9	1 - 2	124	18.2	2030	IRM outside BZ	CMS SOILS SAMPLING 2009
D	AOI-4-SS-1	0 - 0.5	740	19.4	759	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
D	BERA-A12-01	0 - 1	33.5	14.4	648	IRM outside BZ	BERA SOIL SAMPLING 1/06
D	BERA-A12-01	1 - 2	13.3	7.5	249	IRM outside BZ	BERA SOIL SAMPLING 1/06
D	BERA-A12-02	0 - 1	38.4	16.1	598	IRM outside BZ	BERA SOIL SAMPLING 1/06
D	BERA-A12-02	1 - 2	26.1	32.7	799	IRM outside BZ	BERA SOIL SAMPLING 1/06
D	BERA-RNOF05-01	0 - 1	433	3660	124000	IRM outside BZ	BERA SOIL SAMPLING 1/06
D	BERA-RNOF05-01	1 - 2	117	1560	33200	IRM outside BZ	BERA SOIL SAMPLING 1/06
D	BERA-RNOF05-02	0 - 1	163	322	5720	Buffer Zone	BERA SOIL SAMPLING 1/06
D	BERA-RNOF05-02	1 - 2	34.7	47.6	1270	Buffer Zone	BERA SOIL SAMPLING 1/06
D	BFZ-23	0 - 0.5	15.1	21.4	701	Buffer Zone	CMS SOILS SAMPLING 2009
D	BFZ-23	1 - 2	2.1	0.02	2.3	Buffer Zone	CMS SOILS SAMPLING 2009
D	BFZ-24	0.5 - 1	2	0.35	8.1	IRM outside BZ	CMS SOILS SAMPLING 2009
D	BFZ-24	0 - 0.5	6.3	1	112	IRM outside BZ	CMS SOILS SAMPLING 2009
D	BFZ-25	0 - 0.5	21.7	13.5	103	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
D	J20SA	2 - 3	0	0.0	0	IRM outside BZ	92 CPT GRID SAMPLING ECHICAGO
D	NA-22	0 - 0.5	12.1	9.1	489	Buffer Zone	EI DATA GATHERING
D	NAPLOT-01	0 - 0.5	1050	--	10300	IRM outside BZ	NATURAL AREA SAMPLING 8/11
D	NAPLOT-01	0.5 - 1.5	608	--	25800	IRM outside BZ	NATURAL AREA SAMPLING 8/11
D	NAPLOT-15	0 - 0.5	7.6	--	327	Buffer Zone	NATURAL AREA SAMPLING 8/11
D	RFI2-S10A-1	0 - 2	91.1	5.28	288	IRM outside BZ	PHASE II RFI SCREENING
D	RFI2-S10A-2	0 - 1.5	933	5.02	331	IRM outside BZ	PHASE II RFI SCREENING
D	RFI2-S10A-3	0 - 1	39.3	17.3	2160	IRM outside BZ	PHASE II RFI SCREENING
D	RFI2-S10A-4	0 - 1	7.69	0.08	90.6	IRM outside BZ	PHASE II RFI SCREENING
D	RFI2-S10D-1	0 - 1	49	46.8	3270	IRM outside BZ	PHASE II RFI SCREENING
D	RFI2-S10D-2	0 - 1	56.3	54.8	2050	IRM outside BZ	PHASE II RFI SCREENING
D	RFI2-S10D-3	0 - 1	16.3	69.5	2480	IRM outside BZ	PHASE II RFI SCREENING
D	RFI2-S10D-4	0 - 2	374	5930	144000	IRM outside BZ	PHASE II RFI SCREENING
D	RFI2-S12A-1	0 - 2	1870	17.2	669	IRM outside BZ	PHASE II RFI SCREENING
D	RFI2-S12A-2	0 - 1.8	26.5	1.3	397	IRM outside BZ	PHASE II RFI SCREENING
D	S10D-01U	2 - 3.5	3.4	--	--	IRM outside BZ	PHASE I RFI
D	S10D-02U	0 - 2	19.7	--	--	IRM outside BZ	PHASE I RFI
D	S12A-01U	2 - 4	28.3	--	--	IRM outside BZ	PHASE I RFI
D	SPLP-27	0 - 0.5	35.1	--	1530	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
D	SPLP-27	1 - 2	68.8	--	4580 **	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
D	SPLP-27	2 - 2.5	63.9	--	3230	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
E	AOI-4-11	0 - 0.5	18.3	19.7	10300	IRM outside BZ	CMS SOILS SAMPLING 2009
E	AOI-4-19	0 - 0.5	20.9	6.3	751	IRM outside BZ	CMS SOILS SAMPLING 2009
E	AOI-4-2	0 - 0.5	255	781	110000	IRM outside BZ	CMS SOILS SAMPLING 2009
E	AOI-4-2	1 - 2	32.8	51.6	4830	IRM outside BZ	CMS SOILS SAMPLING 2009
E	AOI-4-3	1 - 1.5	12.3	0.91	988	IRM outside BZ	CMS SOILS SAMPLING 2009
E	AOI-4-3	0 - 0.5	7.3	2.2	6070	IRM outside BZ	CMS SOILS SAMPLING 2009
E	BERA-RNOF04-01	0 - 1	4.56	3.16	291	IRM outside BZ	BERA SOIL SAMPLING 1/06
E	BERA-RNOF04-01	1 - 2	3.18	0.38	45.7	IRM outside BZ	BERA SOIL SAMPLING 1/06
E	BERA-RNOF04-02	0 - 1	5.51	2.3	236	Buffer Zone	BERA SOIL SAMPLING 1/06
E	BERA-RNOF04-02	1 - 2	4.43	0.21	59.6	Buffer Zone	BERA SOIL SAMPLING 1/06
E	BERA-S10B-01	0 - 1	161	310	147000	IRM outside BZ	BERA SOIL SAMPLING 1/06
E	BERA-S10B-01	1 - 2	255	671	140000	IRM outside BZ	BERA SOIL SAMPLING 1/06
E	BERA-S10C-01	1 - 2	4.12	--	227	IRM outside BZ	BERA SOIL SAMPLING 1/06
E	BERA-S10C-01	0 - 1	4.77	--	87.7	IRM outside BZ	BERA SOIL SAMPLING 1/06
E	BFZ-20	0 - 0.5	4.2	1.4	430	Buffer Zone	CMS FOLLOW-UP SOILS 2010
E	BFZ-20	0 - 0.5	4	0.56	498	Buffer Zone	CMS FOLLOW-UP SOILS 2010
E	BFZ-21	1 - 1.5	6.3	5.7	245	Buffer Zone	CMS SOILS SAMPLING 2009
E	BFZ-21	0 - 0.5	9.9	9.3	203	Buffer Zone	CMS SOILS SAMPLING 2009

Table 2 (cont.)

IRM Area	Sample	Depth (ft)	Soil Concentration (mg/kg) *			Risk Assessment	
			Arsenic	Cadmium	Lead	Area	Sampling Phase
E	BFZ-22	0 - 0.5	9.4	5.6	520	IRM outside BZ	CMS SOILS SAMPLING 2009
E	NA-20	0 - 0.5	13.2	4.1	339	IRM outside BZ	EI DATA GATHERING
E	NAS03	0 - 0.5	10.2	9.79	857	Buffer Zone	NATURAL AREA SAMPLING 9/08
E	NAS03	0.5 - 1	3.57	7.49	--	Buffer Zone	NATURAL AREA SAMPLING 9/08
E	NAS03	1 - 2	31.6	66.5	--	Buffer Zone	NATURAL AREA SAMPLING 9/08
E	S10C-01S	0.5 - 1.5	10.9	--	--	IRM outside BZ	PHASE I RFI
E	S10C-01U	0.5 - 1.5	17.3	--	--	IRM outside BZ	PHASE I RFI
E	S10C-02U	0.25 - 1.75	7.7	--	--	Buffer Zone	PHASE I RFI
F	AOI-3-41	0 - 0.5	44.6	7.4	889	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-42	0 - 0.5	2750	2.8	237	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-49	0 - 0.5	29.4	7.2	791	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-49	1 - 2	22.9	7	933	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-50	0 - 0.5	38.1	17	1310	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-50	1 - 2	22.3	16.7	821	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-55	0 - 0.5	51	24.5	1190	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-56	0 - 0.5	200	15	2950	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-56	1 - 1.5	78.6	282	8860	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-60	0 - 0.5	8.4	4.5	250	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-61	0 - 0.5	186	24.6	1720	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-66	0 - 0.5	2.9	2.1	110	IRM outside BZ	CMS SOILS SAMPLING 2009
F	AOI-3-68	0 - 0.5	14	24.6	835	IRM outside BZ	CMS SOILS SAMPLING 2009
F	BERA-RNOF01-01	0 - 1	19.6	38.7	1100	IRM outside BZ	BERA SOIL SAMPLING 1/06
F	BERA-RNOF02-01	0 - 1	31.7	72.5	2270	IRM outside BZ	BERA SOIL SAMPLING 1/06
F	BERA-RNOF02-01	1 - 2	77.6	9.66	2900	IRM outside BZ	BERA SOIL SAMPLING 1/06
F	BERA-RNOF02-02	0 - 1	13.4	2.79	91.9	IRM outside BZ	BERA SOIL SAMPLING 1/06
F	BERA-RNOF02-02	1 - 2	27.7	92.2	943	IRM outside BZ	BERA SOIL SAMPLING 1/06
F	BERA-RNOF03-01	0 - 1	3.29	4.85	195	Buffer Zone	BERA SOIL SAMPLING 1/06
F	BERA-RNOF03-01	1 - 2	2.83	0.60	7.68	Buffer Zone	BERA SOIL SAMPLING 1/06
F	BERA-RNOF03-02	0 - 1	2.1	3.84	5.49	Buffer Zone	BERA SOIL SAMPLING 1/06
F	BERA-RNOF03-02	1 - 2	1.52	0.61	3.53	Buffer Zone	BERA SOIL SAMPLING 1/06
F	BERA-S14-01	0 - 1	2770	22.7	--	IRM outside BZ	BERA SOIL SAMPLING 1/06
F	BERA-S14-01	1 - 2	270	25.5	--	IRM outside BZ	BERA SOIL SAMPLING 1/06
F	BERA-S14-02	0 - 1	2360	22.2	--	IRM outside BZ	BERA SOIL SAMPLING 1/06
F	BFZ-10	0 - 0.5	265	52.4	3430	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
F	BFZ-14	0 - 0.5	32.1	56.2	1510	Buffer Zone	CMS SOILS SAMPLING 2009
F	BFZ-16	0 - 0.5	503	20.8	1300	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
F	BFZ-18	0 - 0.5	5.7	3.5	172	Buffer Zone	CMS SOILS SAMPLING 2009
F	BFZ-18	1 - 2	1.8	0.74	2.4	Buffer Zone	CMS SOILS SAMPLING 2009
F	BFZ-19	0 - 0.5	3.5	5.4	49.3	Buffer Zone	CMS FOLLOW-UP SOILS 2010
F	NA-08	0 - 0.5	34.4	81.4	477	IRM outside BZ	EI DATA GATHERING
F	NA-11	0 - 0.5	107	49.4	8650	IRM outside BZ	EI DATA GATHERING
F	NA-13	0 - 0.5	26.8	10.7	925	IRM outside BZ	EI DATA GATHERING
F	NA-16	0 - 0.5	6.4	3.6	127	Buffer Zone	EI DATA GATHERING
F	S14-02U	1 - 3	49	27.9	--	IRM outside BZ	PHASE I RFI
F	S14-03U	0 - 2	64.2	42.2	--	IRM outside BZ	PHASE I RFI
G	BERA-S2D-01	0 - 1	12.5	17.4	208	IRM outside BZ	BERA SOIL SAMPLING 1/06
G	BERA-S2D-01	1 - 2	5.4	5.25	42	IRM outside BZ	BERA SOIL SAMPLING 1/06
G	BERA-S2D-02	0 - 1	8.39	6.19	127	IRM outside BZ	BERA SOIL SAMPLING 1/06
G	BERA-S2D-02	1 - 2	5.93	1.93	40.6	IRM outside BZ	BERA SOIL SAMPLING 1/06
G	BFZ-04	0 - 0.5	40.9	20.4	657	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
G	BFZ-06	0 - 0.5	16.1	17.1	636	IRM outside BZ	CMS FOLLOW-UP SOILS 2010
G	BFZ-08	0 - 0.5	43.2	39.8	1980	Buffer Zone	CMS FOLLOW-UP SOILS 2010
G	GRD-42	0 - 0.5	89.1	83.9	128	IRM outside BZ	CMS SOILS SAMPLING 2009
G	GRD-42	1 - 1.5	6.6	2.8	4290	IRM outside BZ	CMS SOILS SAMPLING 2009
G	S2D-02U	2 - 4	22.4	17.6	194	IRM outside BZ	PHASE I RFI
G1	BFZ-03	0 - 0.5	58.4	37.4	778	Buffer Zone	CMS FOLLOW-UP SOILS 2010
G1	BFZ-11	0 - 0.5	6.5	1.6	37.6	Buffer Zone	CMS SOILS SAMPLING 2009
G1	BFZ-5	0 - 0.5	44.7	13.7	487	Buffer Zone	CMS SOILS SAMPLING 2009
G1	BFZ-7	0 - 0.5	2.6	13	87.5	Buffer Zone Extended	CMS SOILS SAMPLING 2009
G1	BFZ-9	0 - 0.5	17	21.7	604	Buffer Zone	CMS SOILS SAMPLING 2009
G1	BFZ-SS-1	0 - 0.5	66.2	32.6	709	Buffer Zone	CMS FOLLOW-UP SOILS 2010
G1	BFZ-SS-2	0 - 0.5	19.4	71.6	183	Buffer Zone	CMS FOLLOW-UP SOILS 2010
G1	NAS07	0 - 0.5	57.7	29.8	51	Buffer Zone	NATURAL AREA SAMPLING 9/08
G1	NAS07	0.5 - 1	40.6	26.6	1040	Buffer Zone	NATURAL AREA SAMPLING 9/08
G1	NAS07	1 - 2	0.635	1.05	554	Buffer Zone	NATURAL AREA SAMPLING 9/08

Table 2 (cont.)

IRM Area	Sample	Depth (ft)	Soil Concentration (mg/kg) *			Risk Assessment Area	Sampling Phase
			Arsenic	Cadmium	Lead		
H	A11-01S	0 - 2	1.9	--	2.4	Buffer Zone Extended	PHASE I RFI
H	A11-01U	2 - 4	2.3	--	2.4	Buffer Zone Extended	PHASE I RFI
H	A11-02S	0 - 2	2.8	--	6.2	Buffer Zone Extended	PHASE I RFI
H	A11-02U	2 - 2.5	0.6	--	2.8	Buffer Zone Extended	PHASE I RFI
H	BFZ-13	0 - 0.5	17.7	22.5	25.1	Buffer Zone Extended	CMS FOLLOW-UP SOILS 2010
H	BFZ-15	0 - 0.5	14.8	13.9	261	Buffer Zone	CMS SOILS SAMPLING 2009
H	BFZ-17	0 - 0.5	158	6.6	391	Buffer Zone	CMS FOLLOW-UP SOILS 2010
H	NAGR-06	0 - 0.5	14.2	38	91.5	Buffer Zone Extended	CMS FOLLOW-UP SOILS 2010
H	NAGR-07	0 - 0.5	33.6	4.1	5770	Buffer Zone Extended	CMS FOLLOW-UP SOILS 2010
H	NAT-TRENCH-1	0 - 0.5	342	17.5	11.7	Buffer Zone Extended	CMS FOLLOW-UP SOILS 2010
H	NAT-TRENCH-1	1.5 - 2	2.9	0.22	5600	Buffer Zone Extended	CMS FOLLOW-UP SOILS 2010
H	NAT-TRENCH-1	2.5 - 3	5.9	0.12	46	Buffer Zone Extended	CMS FOLLOW-UP SOILS 2010
Outside IRM	NAPLOT-02	0 - 0.5	223	--	3100	Buffer Zone	NATURAL AREA SAMPLING 8/11
Outside IRM	NAPLOT-02	0.5 - 1.5	211	--	4790	Buffer Zone	NATURAL AREA SAMPLING 8/11
Outside IRM	BFZ-01	0 - 0.5	78.3	15.8	1290	Buffer Zone	CMS FOLLOW-UP SOILS 2010
Outside IRM	NA-38	0 - 0.5	2.1	0.19	15.4	Buffer Zone	EI DATA GATHERING
Outside IRM	S14-04U	2 - 4	33.5	0.42	--	Buffer Zone	PHASE I RFI
Outside IRM	S1B-03U	0 - 1	2.6	1.46	63.3	Buffer Zone	PHASE I RFI
Outside IRM	AOI-3-34	0.5 - 1	514	3.7	2380	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-3-34	0 - 0.5	120	3.3	677	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-3-62	0 - 0.5	126	14	1120	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-3-62	1 - 2	31.1	63	913	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-1	0 - 0.5	15.3	7.1	714	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-1	1 - 1.5	13.4	3	204	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-10	1 - 2	11.6	0.21	421	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-10	0 - 0.5	1.7	0.2	89.5	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-12	0 - 0.5	58.8	26	2240	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-12	0.5 - 1	23.8	1.8	865	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-14	0 - 0.5	92.6	40.5	1350	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-20	0 - 0.5	67.2	2.4	1070	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-39	0 - 0.5	89.8	20.8	2320	Redevelopment Area	CMS FOLLOW-UP SOILS 2010
Outside IRM	AOI-4-39	1 - 2	93.4	29.5	2990	Redevelopment Area	CMS FOLLOW-UP SOILS 2010
Outside IRM	AOI-4-39	2 - 3	42.8	29.9	229	Redevelopment Area	CMS FOLLOW-UP SOILS 2010
Outside IRM	AOI-4-4	0.5 - 1	390	0.69	81.2	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-4	0 - 0.5	101	1.5	144	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-5	1 - 1.5	23.9	4.3	546	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-5	0 - 0.5	113	8.8	345	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	AOI-4-6	0 - 0.5	79.2	24.1	1400	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	BERA-RNOF01-02	1 - 2	1.19	0.27	2.07	Redevelopment Area	BERA SOIL SAMPLING 1/06
Outside IRM	BERA-RNOF01-02	0 - 1	2.08	0.40	7.23	Redevelopment Area	BERA SOIL SAMPLING 1/06
Outside IRM	BFZ-2	0 - 0.5	67.7	32.5	828	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	BFZ-2	1 - 2	65.1	40.5	1470	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	GRD-66	1 - 2	14	125	480	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	GRD-66	0 - 0.5	23.9	8.4	837	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	GRD-68	0 - 0.5	19.3	1.6	292	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	GRD-68	1 - 2	419	39	7370	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	GRD-68	1 - 2	183	19.2	29700	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	GRD-69	0 - 0.5	34.6	5.3	666	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	GRD-69	1 - 2	572	13.6	4140	Redevelopment Area	CMS SOILS SAMPLING 2009
Outside IRM	J19SA	2 - 3	0	1.94	126.7	Redevelopment Area	92 CPT GRID SAMPLING ECHICAGO
Outside IRM	NAPLOT-06	0 - 0.5	247	--	2850	Buffer Zone Extended	NATURAL AREA SAMPLING 8/11
Outside IRM	NAPLOT-06	0.5 - 1.5	226	--	3230	Buffer Zone Extended	NATURAL AREA SAMPLING 8/11
Outside IRM	NAPLOT-14	0 - 0.5	17.1	--	1020	Buffer Zone Extended	NATURAL AREA SAMPLING 8/11
Outside IRM	NAPLOT-14	0.5 - 1.5	16.2	--	971	Buffer Zone Extended	NATURAL AREA SAMPLING 8/11
Outside IRM	S10A-01U	2 - 4	5.5	--	--	Redevelopment Area	PHASE I RFI
Outside IRM	S14-01U	2 - 4	175	4.02	--	Redevelopment Area	PHASE I RFI

\* Highlighted data indicates soil concentrations that would potentially exceed TCLP threshold values of:

Arsenic: 5,548 mg/kg soil concentration

Cadmium: 235 mg/kg soil concentration

Lead: 4,606 mg/kg soil concentration

\*\* Soil samples with concentration approaching TCLP threshold for lead that will also be evaluated as potentially hazardous

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IRM soil removal\_likely TCLP based on regression data\_mod 082012.xlsx  
8/22/2012

**Table 3**  
**Buffer Zone Interim Remedial Measures (IRM)**  
**Historical Soil Samples from Additional Areas Within Extended IRM Boundaries**

Extended IRM Area	Sample	Depth (ft)	Soil Concentration (mg/kg)			Sampling Phase
			Arsenic	Lead	Zinc	
C'	NAPLOT-06	0 - 0.5	247	2,850	12,400	NATURAL AREA SAMPLING 2011
C'	NAPLOT-06	0.5 - 1.5	226	3,230	15,100	NATURAL AREA SAMPLING 2011
D'	NAPLOT-02	0 - 0.5	223	3,100	5,520	NATURAL AREA SAMPLING 2011
D'	NAPLOT-02	0.5 - 1.5	211	4790*	12,500	NATURAL AREA SAMPLING 2011
D'	NA-SS-2	0 - 0.5	344	2,610	14,000	CMS FOLLOW-UP SOILS 2010
H'	NAPLOT-31	0 - 0.5	277	1,500	11,900	NATURAL AREA SAMPLING 2011
H'	NAPLOT-31	0.5 - 1.5	278	658	9,711	NATURAL AREA SAMPLING 2011
H'	NAT-TRENCH-2	0 - 0.5	193	5640*	3,090	CMS FOLLOW-UP SOILS 2010
H'	NAT-TRENCH-3	0 - 0.5	109	4460*	4,590	CMS FOLLOW-UP SOILS 2010
H'	NA-S08	0 - 0.5	54.5	1,110	9,360	NATURAL AREA SAMPLING 2008
H'	NA-S08	0.5 - 1.0	322	4720*	5,270	NATURAL AREA SAMPLING 2008
H'	NA-S08	1.0 - 2.0	95.5	1,770	2,170	NATURAL AREA SAMPLING 2008
I	NAPLOT-35	0 - 0.5	42.1	516	71,700	NATURAL AREA SAMPLING 2011
I	NAPLOT-35	0.5 - 1.5	62.6	982	65,900	NATURAL AREA SAMPLING 2011
I	NAPLOT-36	0 - 0.5	34.7	1,930	86,300	NATURAL AREA SAMPLING 2011
I	NAPLOT-36	0.5 - 1.5	26.9	1,090	65,600	NATURAL AREA SAMPLING 2011
I	NAPLOT-37	0 - 0.5	27.6	848	6,020	NATURAL AREA SAMPLING 2011
I	NAPLOT-37	0.5 - 1.5	38.4	770	3,990	NATURAL AREA SAMPLING 2011

\* Soil concentrations near or above a 4,606 mg/kg TCLP threshold concentration for lead.



← PRB WALL

SOLID WASTE LANDFILL

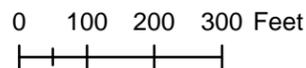
SOIL STORAGE AREA

Possible Hazardous Soil Storage Area

Natural Area

**LOCATIONS OF INTERIM REMEDIAL MEASURES:**

- A. Sediment accumulation removal area
- B. SWMU-1C east boundary
- C. Southeast section of SWMU-1C
- D. Acid neutralization pits SWMU-10A/10D
- E. Acid neutralization pits SWMU-10B/10C
- F. Chrome outfall area (SWMU-14)
- G. Main fly ash disposal area (SWMU-2D)
- G'. South drain area
- H. Stormwater runoff ditch (AOC-11)
- I. Stormwater runoff path



- Basemap
- Existing Fence Line
- River
- Approximate Property Boundary
- Solid Waste Landfill
- Proposed Approximate Realignment of Fence
- PRB Wall Location (approximate)
- Buffer Zone
- Target Remediation Area
- Redevelopment Area
- Additional IRM
- Sensitive Habitat- No excavation

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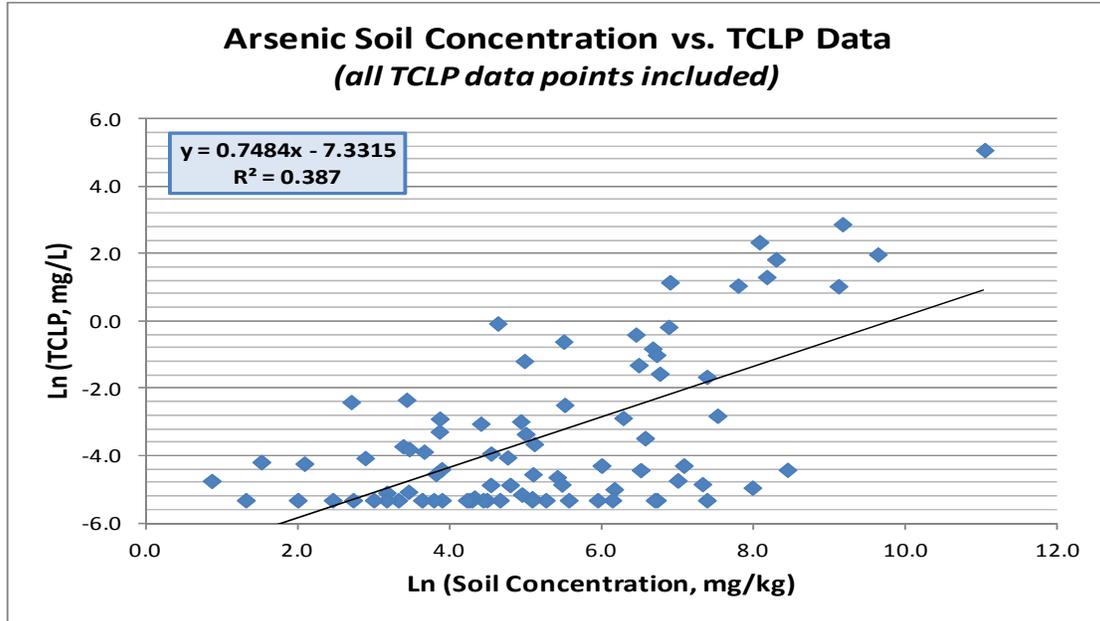
Title:  
**INTERIM REMEDIAL MEASURES LOCATION**  
 Revised Supplemental Corrective Measures Study Investigation  
 DuPont East Chicago Facility  
 East Chicago, Indiana

Prepared by: Muyiwa Sami	Date: 8/21/2012	DuPont Project No: 507942
Reviewed by:	Figure No: 1	PARSONS Project No: 446650
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Figure 2. Soil Concentration vs. TCLP Regression - East Chicago Site Data

All TCLP Data Included

Arsenic TCLP Limit = 5 mg/L  
ln(SOIL) 11.947  
Soil Threshold (mg/kg) 154,313



Excluding TCLP <0.1 mg/L Data

Arsenic TCLP Limit = 5 mg/L  
ln(SOIL) 8.621  
Soil Threshold (mg/kg) 5,548

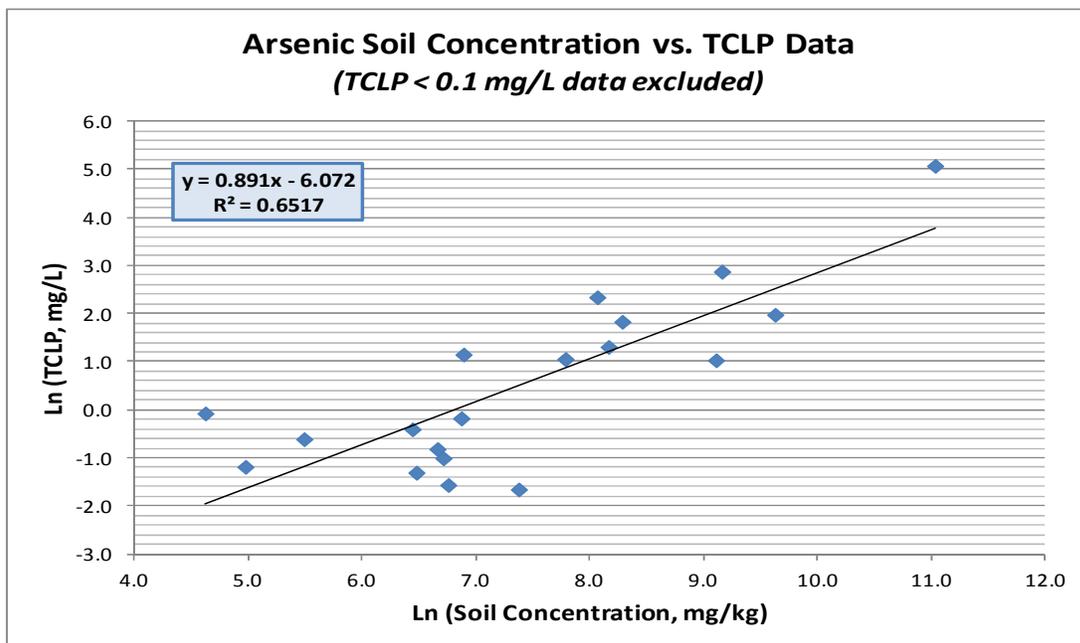
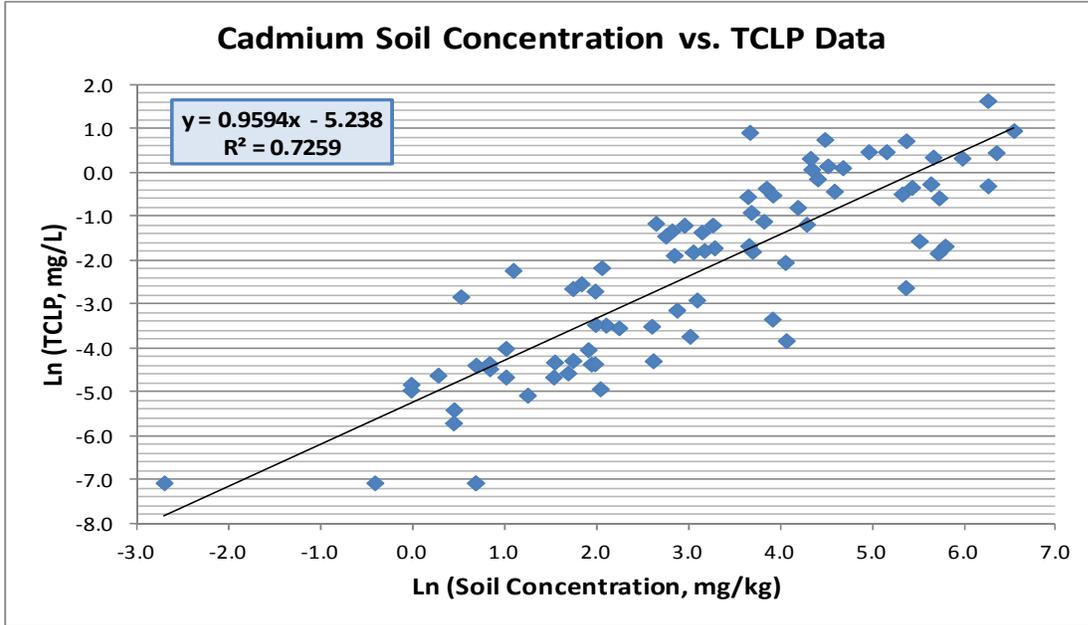
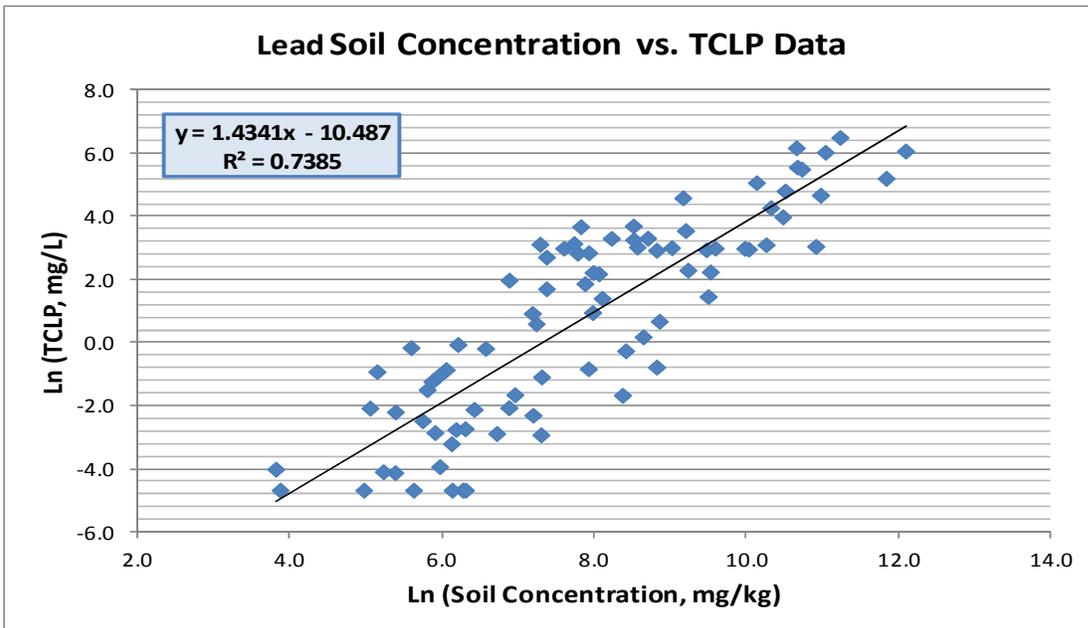


Figure 2. Soil Concentration vs. TCLP Regression - East Chicago Site Data (cont.)

Cadmium TCLP Limit = 1 mg/L  
ln(SOIL) 5.4597  
Soil Threshold (mg/kg) 235



Lead TCLP Limit = 5 mg/L  
ln(SOIL) 8.4351  
Soil Threshold (mg/kg) 4,606





PRB WALL

SOLID WASTE LANDFILL

SOIL STORAGE AREA

Possible Hazardous Soil Storage Area

Natural Area

- Cd > 235 mg/kg
- Pb > 4606 mg/kg
- As > 5548 mg/kg

0 100 200 300 Feet

**LOCATIONS OF INTERIM REMEDIAL MEASURES:**

- A. Sediment accumulation removal area
- B. SWMU-1C east boundary
- C. Southeast section of SWMU-1C
- D. Acid neutralization pits SWMU-10A/10D
- E. Acid neutralization pits SWMU-10B/10C
- F. Chrome outfall area (SWMU-14)
- G. Main fly ash disposal area (SWMU-2D)
- G'. South drain area
- H. Stormwater runoff ditch (AOC-11)

- Basemap
- Existing Fence Line
- River
- Approximate Property Boundary
- Solid Waste Landfill
- Proposed Approximate Realignment of Fence
- PRB Wall Location (approximate)
- Buffer Zone
- Target Remediation Area
- Redevelopment Area

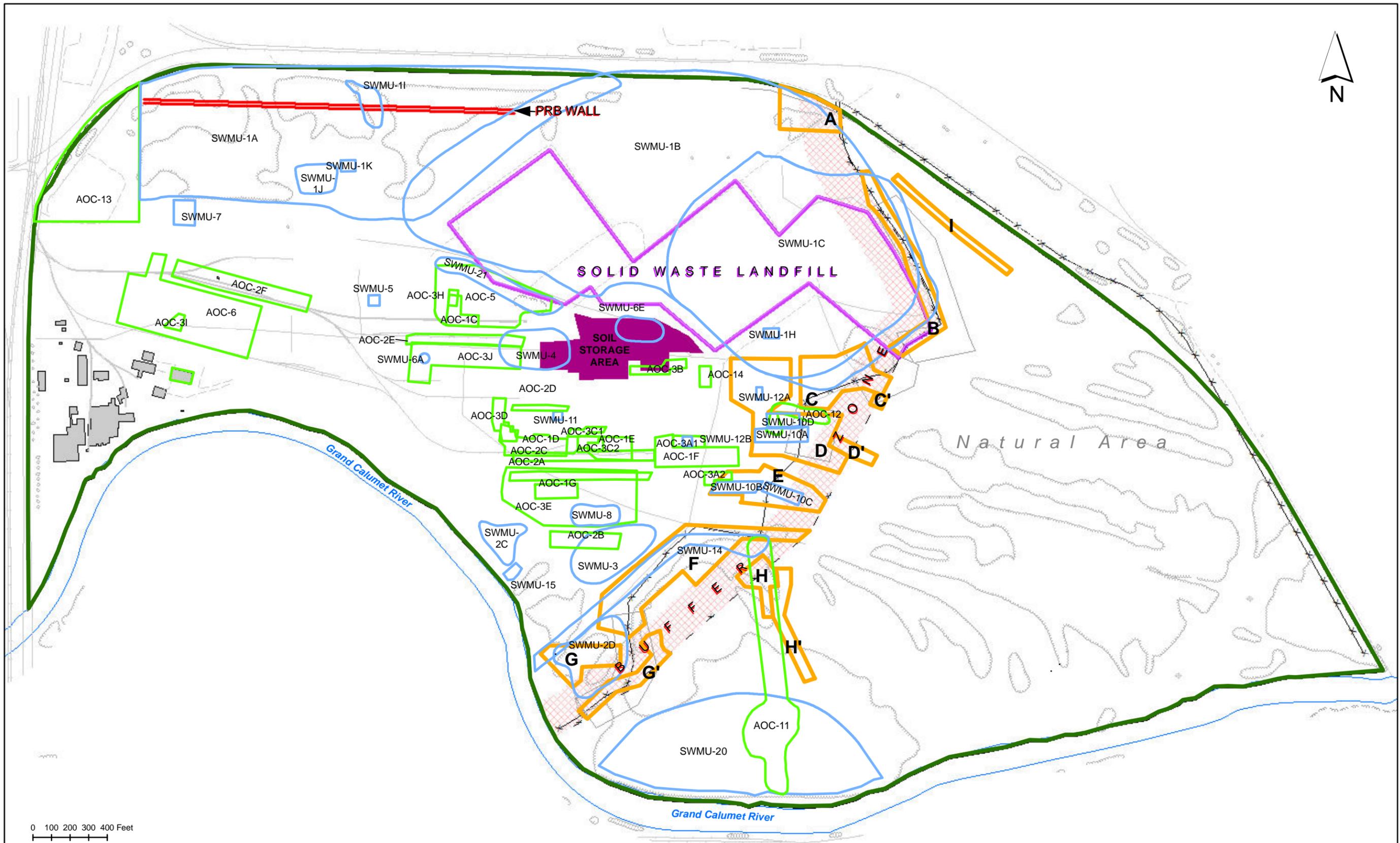
- Excavation Area Sampling Location**
- < TCLP Threshold Values for As, Cd, and Pb outside IRM's
  - Samples approaching TCLP threshold for Lead

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Title: **HISTORICAL SURFACE SOIL SAMPLES COLLECTED FROM IRM SITES AND ADJACENT AREA**  
Revised Supplemental Corrective Measures Study Investigation  
DuPont East Chicago Facility  
East Chicago, Indiana

Prepared by: Muyiwa Sami	Date: 8/22/2012	DuPont Project No: 507942
Reviewed by:	Figure No: 3	PARSONS Project No: 446650
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Note: Topographic data from previous study conducted prior to 2009.



**Title: Overall Property AOC**  
Revised Supplemental Corrective Measures Study Investigation  
DuPont East Chicago Facility  
East Chicago, Indiana

- Basemap
- Existing Fence Line
- River
- Approximate Property Boundary
- Site Structure
- Solid Waste Landfill
- Proposed Realigned Fence
- AOC Boundary
- SWMU Boundary
- Soil Storage Area
- Hazardous Soil Stockpile Area
- Overall Property Area AOC

Prepared by: Muyiwa Sami	Date: 8/22/2012	DuPont Project No: 507754
Reviewed by:	Figure No: 4	PARSONS Project No: 446702
File Path: J:\DuPont East Chicago\DUPOINT\GIS\East_Chicago\Project_Figures\MMDFigure 4.mxd		



← PRB WALL

SOLID WASTE LANDFILL

Natural Area



0 100 200 300 Feet

- |                               |   |                                  |   |
|-------------------------------|---|----------------------------------|---|
| Basemap                       | Solid Waste Landfill                      | Target Remediation Area          | <b>Excavation Area Sampling Location</b><br>< TCLP Threshold Values for As, Cd, and Pb outside IRM's<br>Post Excavation IRM Sampling Location<br>Additional Post Excavation IRM Sampling Location |
| Existing Fence Line           | Proposed Approximate Realignment of Fence | Redevelopment Area               |   |
| River                         | PRB Wall Location (approximate)           | Sampling Area                    |   |
| Approximate Property Boundary | Buffer Zone                               | Sensitive Habitat- No excavation |   |

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Title: **POST EXCAVATION SAMPLE LOCATIONS**  
Revised Supplemental Corrective Measures Study Investigation  
DuPont East Chicago Facility  
East Chicago, Indiana

Prepared by: Muyiwa Sami	Date: 8/22/2012	DuPont Project No: 507942
Reviewed by:	Figure No: 5	PARSONS Project No: 446650

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**HEALTH AND SAFETY PLAN**  
**APPENDIX Q - AIR SAMPLING PLAN**

**DUPONT EAST CHICAGO INTERIM REMEDIAL ACTION – EXCAVATION**

**EAST CHICAGO, INDIANA**

**June 20, 2012**

## EAST CHICAGO SITE - AIR MONITORING/SAMPLING PLAN

This air monitoring plan has been developed for the former DuPont East Chicago site to address site and worker protection. Real time air monitoring will be performed to measure total dust. The contractor will conduct periodic real-time air monitoring in the worker's breathing zone and at the perimeter of the exclusion zone to aid in decision-making for implementing dust control, and personal protective equipment (PPE) changes. The contractor will perform air sampling for lead, arsenic, and cadmium in the worker's breathing zone using NIOSH Method 7300. Parsons will perform the same tasks for their employees and will conduct PM<sub>10</sub> sample collection.

Air samples will be obtained once the initial intrusive activity commences and will continue for several days in order to characterize potential worker exposures. Parsons and the contractor will be responsible for determining the frequency of sampling and administering this program in coordination with DuPont.

It is anticipated that Level D and modified Level D PPE will be used during excavation activities. If monitoring results indicate elevated concentrations above action levels, additional PPE will be required.

### 1.0 WORK AREA AIR SAMPLING PLAN

The East Chicago Site interim remedial measure (IRM) involves a series of soil excavations in the eastern portion of the Site along the Buffer Zone to the Natural Area. Remediation activities consist of the excavation, moving, and storage of contaminated soils that have the potential to generate airborne dust which could migrate from the active work areas.

The contractor will implement dust suppression measures such as water spraying to help control particulate concentrations in the air. Air sampling in the work area will be implemented to document the actual particulate and metal concentrations levels that occur over the course of typical construction days. The contractor will provide results of the air monitoring weekly to the Parsons site supervisor to document that the appropriate PPE levels were used. The Parsons supervisor will submit these results to DuPont and Parsons Health and Safety weekly.

This plan describes the air sampling approach that will be implemented.

The objective of air sampling is to assess concentrations of dust and COC's in both work area and at the site perimeter. This will be accomplished by sampling over an 8 to 10-hour period corresponding to a construction day for a representative number of days over the duration of the construction work.

The target compounds to be sampled will consist of dust (PM<sub>10</sub>), along with the contaminant metals (arsenic, lead, and cadmium). The PM<sub>10</sub> is selected as the dust type to sample as it is invisible in the ambient air and is the basis for State and National ambient air quality 24-hour particulate standards.

To augment the work area sampling, as well as the real-time dust monitoring, meteorological data will be continuously recorded from the beginning to the end of the remediation work using an on-site meteorological monitoring station located in a central area of the Site. The station will record the following parameters:

- wind speed;
- wind direction;
- air temperature;
- relative humidity (RH);
- barometric pressure; and
- precipitation.

The meteorological station will be located in an area that is clear of buildings, trees, or other obstructions, at a height of approximately 10 feet above ground or more, in accordance with USEPA citing and exposure criteria (USEPA 2008).

### 1.1 Methods of Work Area Air Sampling

The data collection method consists of time-integrated manual air sampling with off-site laboratory analysis of PM<sub>10</sub> and PM<sub>10</sub>-metals. The sections below provide a brief description of the types of instruments, detection limits, and any applicable procedures.

#### PM<sub>10</sub>

PM<sub>10</sub> samples will be collected via a low-volume sampling method, coupled with pre- and post-sampling gravimetric analyses of the sample filters. The low-volume sampling method with use of a size-selective inlet with a cut point of 10 microns is a precise and accurate method that closely tracks the USEPA Federal Reference Method (FRM) for determination of PM<sub>10</sub> concentrations in the ambient air.

The MiniVol TAS PM<sub>10</sub> sampler will be mounted on elevated platforms such as posts, poles or tripods to provide sampling at an approximate "breathing zone" height of 1.5 to 2 meters above the ground.

#### Metals

Trace metal concentrations will be determined by combining the low-volume sampling method with USEPA's IO-3 Method (Chemical Species Analysis of Collected Suspended Particulate Matter) for inorganic compounds. The exposed filters will be submitted to a laboratory for chemical analysis of lead, arsenic, and cadmium.

Since trace metal levels are determined through chemical analysis of collected PM<sub>10</sub> filter samples, the corresponding ambient concentrations (i.e., ug/m<sup>3</sup>) will also be measured and reported as 8- to 10-hour integrated averages.

The analytical detection limits for the metals must be low enough to measure trace background levels in the air samples and allow comparison to appropriate reference values. **Table 1** presents background concentrations reported in the literature for each target metal:

**Table 1**  
**Reported Background Air Concentrations for Metals**

Parameter	Concentration ( $\mu\text{g}/\text{m}^3$ )	Source
Lead (Pb)	0.01 - 0.28	USEPA
Arsenic (As)	<0.001 – 0.03	ATSDR
Cadmium (Cd)	< 0.01	ATSDR

**Table 2** gives the recommended minimum analytical detection limits based on the lower of the ambient air standards/guidelines or typical background concentration values for each parameter:

**Table 2**  
**Minimum Detection Limits**

Parameter	Based on Standard/Guideline or Background Conc.	Detection Limit	
		( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{filter}$ )*
Lead (Pb)	Low-end Background	0.001	1.6
Arsenic (As)	RBC – cancer (annual)	0.0000574	0.092
	Low-end Background	0.0001	0.16
Cadmium (Cd)	RBC – cancer (annual)	0.00014	0.22
	RBC – noncancer (annual)	0.001	1.6

Note: Recommended detection limits are one-tenth of the desired minimum measurement value for each parameter.

\* Based on a typical high volume air sample volume of 1600 cubic meters.

### **Laboratory Analysis**

All laboratory analyses for this program will be performed by Bureau Veritas, located in Novi, Michigan. The analytical work includes gravimetric determination of particulate matter on filters (pre- and post-sampling weights) and instrumental analysis of particulate matter for the three target metals by ICP-MS.

### **Meteorological Conditions**

A meteorological monitoring station will be employed that consists of sensors capable of continuously measuring wind speed, wind direction, temperature, RH, barometric pressure, and precipitation. The system will meet USEPA specifications for air quality monitoring studies. A **Met One Instruments Automet Model 466A** meteorological monitoring station (or equivalent) will be used for the meteorological monitoring component of the sampling program. **Attachment 1** also includes vendor specifications for the meteorological station.

## 1.2 Sampling Locations

One MiniVol PM<sub>10</sub> sampler will be located to meet the objectives of the work area air monitoring and consistent with forecast and/or observed winds for the construction day to ensure the collection of a downwind sample. For each sampling day, the sampler will be located in the downwind direction approximately 100 to 200 feet from the active work area. The sampler will be mounted on a tripod or equivalent to ensure sample collection in the breathing zone at a height of 1.5 to 2.0 meters. If winds change substantially during the construction day, then the sampler will be moved to the new downwind location at the same distance from the active work area.

## 1.3 Frequency and Duration of Sampling

PM<sub>10</sub> sampling will be performed at a single downwind location on a frequency of once per week. The sampling schedule will be rotated by day such that the first weekly sample will be collected on a Monday, followed by the next sample on Tuesday, and then Wednesday, Thursday, and Friday. This type of schedule will continue for the duration of the IRM, which is expected to take 5 to 6 months to complete, and will result in a total of approximately 22 to 26 PM<sub>10</sub> samples that will be submitted for metals analysis.

## 1.4 Data Management and Reporting

Data management begins with the assembly and initial review of all field materials including particulate filters and corresponding sampler run data, meteorological data, field log notes, and calibration forms. These data are reviewed prior to and subsequent to each sampling event.

At the conclusion of sampling, the particulate filter is returned to the laboratory for equilibration and final weighing to determine the PM<sub>10</sub> concentration. The filter will then be used by the laboratory for analysis and determination of metals. The laboratory will provide analytical results to Parsons within 5 days of receipt of each filter.

Meteorological data will be downloaded on a daily basis from the monitoring station. Data will be reviewed for consistency and completeness. Upon completion of all sampling, meteorological data will be processed into a “reader-friendly” format suitable for reporting meteorological conditions with concurrent sampling and real-time dust results.

A final data summary will be prepared presenting the results of each sampling event to include air sampling and meteorological data summaries.

All meteorological data and sampling records will be compiled and maintained by Parsons for project documentation.

## 1.5 Quality Assurance

### Air Sampling Personnel

Monitoring and sampling activities will be performed by appropriately trained and experienced individuals. Training will include completion of a 40-hour hazardous waste activities training course in compliance with OSHA Standard 29 CFR 1910, as well as an 8-hour refresher course within the last year. Monitoring personnel will also be experienced or trained in the calibration, operation, and routine maintenance of the specific monitoring equipment being used for the work area sampling.

### **MiniVol Air Sampler**

The PM<sub>10</sub> sampler will be calibrated prior to the start of the sampling program. The calibration procedures will conform to manufacturer's standard instructions (see Operations Manual in **Attachment 2**). This calibration will ensure that the samplers are functioning within the allowable tolerances established by the manufacturer and required on this program. Records of sampler calibration and instrument manuals will be maintained in a field notebook.

At the beginning and end of each sampling event the sampler will check the flow for proper operation. This check is required to verify the flow rate and calculating sample volume for each sample collected. This information will be recorded in a spreadsheet along with the lab-provided PM<sub>10</sub>/metals mass, the air concentrations for the sample collected.

### **Laboratory Instruments**

The laboratory will follow calibration procedures and schedules as specified in the relevant sections of the USEPA guidance documents or other established sampling methods and any subsequent updates that may apply.

### **Meteorological Monitoring System**

The meteorological monitoring station will be field-calibrated upon start-up. This consists of sensor-control calibration checks on the individual sensors and includes aligning the wind direction vane to true north. Once data collection begins, the system will not be moved.

The meteorological station is designed to run unattended in the field for long periods of time up to 6 months without requiring calibrations or maintenance. The duration of this program is expected to be up to 6 months; therefore, end-of-period calibration checks will be required and performed once the IRM is completed. Should a malfunctioning sensor be detected and replaced, the replacement sensor will be field-calibrated when placed into service. In addition, if the meteorological station is relocated or repositioned, the wind vane will need to be realigned to true north.

## **2.0 WORK SPACE PARTICULATE MONITORING**

Qualitative airborne dust monitoring will be conducted continuously throughout the project by all personnel on site. The first response to the generation of airborne dust will be the application of a water mist to reduce the migration of the dust followed by an adjustment to work practices to minimize dust generation.

An action level for worker exposure has been set at 2.5 mg/m<sup>3</sup> based on the average concentrations of site specific COCs.

### **2.1 Method of Air Monitoring**

Real-time measurements for dust particulates will be obtained using *personal*DataRAM or equivalent □for *Personal* Data-logging. The Thermo Electron Corporation *personal*DataRAM is designed to measure the concentration of airborne particulate matter (liquid or solid), providing direct and continuous readout as well as electronic recording of the information. In addition, an audible alarm will sound when a user-defined action level is exceeded. This unit operates as a passive air sampler. The *p*DR-1000 passively samples (i.e., without a pump) the air

surrounding the monitor; air freely accesses the sensing chamber of the instrument by means of convection, diffusion, and adventitious air motion.

## **2.2 Monitoring Locations**

Visual monitoring for airborne dust will be performed continuously throughout the project. The contractor will be responsible for monitoring the work area to ensure proper worker PPE. In addition, the contractor will be held accountable for observing, reporting, controlling, and minimizing dust generation during all phases of the onsite work.

The contractor will periodically take measurements and use discretion in locating upwind and downwind areas from which to perform real-time dust monitoring. At various times the contractor may place a pDR- 1000 on equipment and/or a construction worker via a shoulder harness, working in the active areas. Real time readings will be collected in a potential worker's breathing zone to assess potential worker exposure to dust. Data will be downloaded and provided to the Parsons and DuPont Health and Safety Representatives for evaluation.

## **2.3 Frequency of Monitoring**

Monitoring for visible airborne dust emissions will be performed continuously during excavation activities by the entire onsite work force. The contractor will perform hourly real-time air monitoring using the pDR-1000 or equivalent during excavation and material-handling operations when potential lead, arsenic and cadmium-containing dust may be generated. Readings will be collected at least twice per day by Parsons. The real-time monitoring will not be conducted during inclement weather conditions (e.g., rain or heavy fog) because these conditions interfere with the equipment function and may damage the monitors. However, light precipitation will reduce the potential for the generation of dust so work can proceed under these conditions, even if the monitors cannot be operated. During these periods of operation, visual observations will be used to determine if dust emissions are being generated which require suppression measures.

## **2.4 Data Collection Requirements**

During all monitoring activities, it is essential that comprehensive data be collected relative to the tasks being performed. Observational data and periodic field readings of onsite monitors are to be recorded on the appropriate data record form, found in Attachment 3. Applicable chain-of-custody procedures must be maintained for all samples sent to an offsite laboratory for analysis.

## **3.0 PERSONNEL MONITORING**

Although dust suppression measures will be used, air sampling will also be performed to quantify concentrations of lead and arsenic in the air within the breathing zone to assess worker exposure levels.

### **3.1 Methods of Personal Air Sampling**

The contractor will perform air sampling for lead, arsenic, and cadmium in the worker's breathing zone using NIOSH Method 7300. Parson will perform the same tasks for their employees. Arsenic, cadmium, and lead will be analyzed by an American Industrial Hygiene Association (AIHA) approved laboratory. The results of these monitoring activities will be provided to the Parsons as they become available.

## **3.2 Sampling Locations**

Homogeneous Exposure Groups (HEGs) will be identified as part of this excavation and materials-handling phase of the project. Establishing HEGs is a recognized exposure assessment method for personnel performing similar activities where exposure potential would be predicted to be the same or reasonably equivalent. The DSR will identify personnel in each HEG to wear the personal monitoring devices.

### **3.2.1 Frequency of Sampling**

In general, dust samples will be obtained once the initial intrusive activity commences and will continue for several days in order to characterize potential worker exposures. Periodic monitoring will be conducted when work begins on a different portion of the Site, if a different type of operation is being initiated, or if employees are working with materials known to contain lead, cadmium, and arsenic at locations where monitoring was not performed previously. Air sampling will be performed for the duration of field activities conducted in hazardous areas of the site or after analyzing the sample data DuPont Health and Safety determine that air sampling is not required.

## **4.0 RECORD KEEPING**

All records will be compiled and maintained by Parsons for project documentation. The Contractor is also responsible for maintaining their monitoring data and providing a copy to Parsons on a weekly basis.

Records will include the following:

1. Pre-calibration (before personal air sampling begins)
2. Post-calibration (after personal air sampling has been completed)
3. Field observations
4. Calculations and chain-of-custody forms
5. Lead, and arsenic analytical results
6. Daily monitoring will be recorded in the log book
7. Downloaded electronic data from air monitor equipment

## 5.0 MINIMUM DATA REQUIREMENTS

The following lists the minimum data that are to be collected for sampling

Air pump/monitor data

Pump or instrument ID	Initial flow rate (L/min)
Final flowmeter setting	Calibration date
Final flow rate (L/min)	Calibrator type
Average flow rate (L/min)	Initial flow meter setting

Sample media information (filter cassettes)

• Field sample ID	Media type
• Lab ID #	Type sample

Sampling information

• Start date	Sample time
• Start time	Sample volume (L)
• End date	Sample volume (m3)
• End time	Analysis
• Sample time	

Task description (for personal monitoring)

• Employee name/area description	Job task
• Employer	Activity

Results

Total mass ( $\mu\text{g}$ ) (arsenic/lead lab results Lab result only)	Lab comments
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## 6.0 ACTION LEVELS

The air-monitoring program at the Former DuPont East Chicago site consists of a combination of work zone, personnel (worker) monitoring for particulates (dust), and air sampling for lead, arsenic, and cadmium.

**Table 3** outlines the various action levels to be adhered to during the IRM.

**Table 3**  
**Action Levels**

Air-Sampling Instrument (Real Time)	Action Level	Action Taken when Action Level is Met or Exceeded
Work zone dust	2.5 mg/m <sup>3</sup> total dust	Additional dust control methods will be implemented and construction activities responsible for generating the dust may be temporarily suspended if dust control is not effective. Respirators may be worn by workers in the exclusion zone represented by the air-sampling results.
Lead	0.05 mg/m <sup>3</sup> (TWA 8 hours)	Results from personal lead sampling will be used to assess if respiratory protection for worker protection and safety is required.  TWA, time-weighted average.
Cadmium	PEL: 0.005 mg/m <sup>3</sup>	Results from personal lead sampling will be used to assess if respiratory protection for worker protection and safety is required.  .
Arsenic	0.01 mg/m <sup>3</sup> (TWA 8 hours)	Results from personal arsenic sampling will be used to assess if respiratory protection for worker protection and safety is required.  TWA, time-weighted average.

### **Action Level—Visible Monitoring**

The observation of airborne dust in the excavation area will be used as a primary action level by site project team personnel. If dust is visible in a localized area, dust suppression methods will be immediately implemented. If dust is visible from any active excavation area and is evident outside the active excavation area, engineering controls or alternate dust control methods will be initiated at once. As stated previously, the dust suppression primarily consists of using water to

wet down an area of dust generation. Covering stockpiles with tarps or wetting the stockpile with water are effective dust suppression methods.

## **EPA Comments on the DuPont East Chicago IRM Soil Management Plan**

*Threshold TCLP Values* - The calculated threshold soil concentrations are 5,548 mg/kg for arsenic, 235 mg/kg for cadmium, and 4,606 mg/kg for lead. The regression analyses for these metals indicates positive correlations and that a major percentage of total variation in TCLP can be explained by the relationship between TCLP and the soil concentrations.

The number of sample locations cited in the plan that exceed the calculated threshold soil concentrations are inconsistently presented throughout the plan. For lead, cadmium, and arsenic respectively, the number of exceedances described in the text are 8, 17, and 1, depicted in Figure 1 are 8, 20, and 1, and shown in Table 2 are 4, 16 and 1. Determine and provide the actual numbers of exceedances in the text, highlight the exceedances in the table, and show their locations in the figure.

*Soils Management* - Define the Area of Contamination (AOC) in a figure that is supported by soil data and SWMU locations. Identify the exact location within the AOC where the hazardous and non-hazardous soil stockpiles will be managed and provide the release controls to be employed (e.g., run-on, run-off, leaching, wind dispersion).

DuPont proposes to excavate a 25 by 25 foot square area around each sample exceeding a calculated threshold soil concentration. Within certain target remediation areas, there are contiguous areas that should be excavated as larger excavations. This includes a 50'x150' area in the north portion of Area C, a 100'x200' and 50'x100' area in the eastern and northern portions of Area D, a 100'x200' area in the western portion of Area E, a 50'x50' area in the northwest portion of Area F, and a 50'x50' area in the northern portion of Area H.

EPA recommends performing these larger excavations of the hazardous waste soils. In the alternative to performing larger excavations to remove and segregate hazardous waste soils, DuPont may perform the proposed smaller excavations around each sample point exceeding the threshold soil concentration but must conduct confirmation sampling along each excavation sidewall to assess whether the excavation may ease or be extended further. In either case, all excavation areas (proposed as 25 by 25 feet square) wholly within the target remediation areas should have confirmation composite samples taken from each of the sidewalls and analyzed to assess whether the initial excavation of hazardous waste soils is sufficient. Using field XRF to supplement confirmation sampling could streamline this process.

Some sample locations approach but do not exceed the soil threshold concentration for lead. Because of some uncertainty associated with the calculated predictions, also excavate and segregate IRM Area D sample locations AOI-4-29 (4,040 mg/kg) and SPLP-27 (4,580 mg/kg), and IRM Area G sample location GRD-42 (4,290 mg/kg) as hazardous waste if they are located adjacent to any of the identified hazardous waste soils in those two areas.

Stockpiled soils in the AOC will be segregated as hazardous and non-hazardous. In situ sampling has or will have defined those two stockpiles of excavated soil. Therefore, it is unnecessary to further sample the stockpiled soils for characterization purposes. If DuPont wishes to render the hazardous waste soil stockpile non-hazardous, there are various treatments that may be performed within the AOC to meet this goal. DuPont may propose treatment technologies for use

and submit a plan for demonstrating that the hazardous waste soil stockpile no longer exhibits the toxicity characteristic for arsenic, cadmium, or lead.

*Post Excavation Sampling* - Two confirmation samples are proposed to be collected for every one acre of excavation. Each confirmation sample will be a composite of three sub-samples. Describe how and where the sub-samples to be composited will be collected, including their depth and relative locations. EPA recommends a six inch sub-sample depth for the excavation floor.

Because of the apparent highly variable nature of metal concentrations in onsite soils, EPA recommends two confirmation samples (not one) be collected for every half-acre of excavation to provide for better representativeness. Also, EPA uses five sub-samples per composite sample when sampling for lead in residential soil and recommends five rather than three sub-samples for post excavation sampling. For excavations of areas that are defined as containing hazardous waste soils, include sidewall sampling as described above in the Soils Management section.

For the characterization samples proposed to be collected in the Buffer Zone, provide the sampling procedures for the sub-samples to be composited, including their depth and relative locations. Will only surface soil samples be taken?

The exposure concentration procedures provided in the IDEM RISC Technical Guidance will not be considered in the IRM confirmation sampling program. Therefore, the results for metal concentrations from post excavation IRM sampling locations, Buffer Zone characterization samples, and sample locations presented in Table 1 outside the IRM area must be evaluated and compared to the final risk-based human health and ecological numbers in the Corrective Measures Study. Additional remediation may be required in the IRM area (target remediation area, redevelopment area, and buffer zone) as part of the final remedy based on this risk evaluation.

**APPENDIX D  
AIR MONITORING PLAN**



## EAST CHICAGO SITE - AIR MONITORING/SAMPLING PLAN

This air monitoring plan has been developed for the former DuPont East Chicago site to address site and worker protection. Real time air monitoring will be performed to measure total dust. The contractor will conduct periodic real-time air monitoring in the worker's breathing zone and at the perimeter of the exclusion zone to aid in decision-making for implementing dust control, and personal protective equipment (PPE) changes. The contractor will perform air sampling for lead, arsenic, and cadmium in the worker's breathing zone using NIOSH Method 7300. Parsons will perform the same tasks for their employees and will conduct PM<sub>10</sub> sample collection.

Air samples will be obtained once the initial intrusive activity commences and will continue for several days in order to characterize potential worker exposures. Parsons and the contractor will be responsible for determining the frequency of sampling and administering this program in coordination with DuPont.

It is anticipated that Level D and modified Level D PPE will be used during excavation activities. If monitoring results indicate elevated concentrations above action levels, additional PPE will be required.

### 1.0 WORK AREA AIR SAMPLING PLAN

The East Chicago Site interim remedial measure (IRM) involves a series of soil excavations in the eastern portion of the Site along the Buffer Zone to the Natural Area. Remediation activities consist of the excavation, moving, and storage of contaminated soils that have the potential to generate airborne dust which could migrate from the active work areas.

The contractor will implement dust suppression measures such as water spraying to help control particulate concentrations in the air. Air sampling in the work area will be implemented to document the actual particulate and metal concentrations levels that occur over the course of typical construction days. The contractor will provide results of the air monitoring weekly to the Parsons site supervisor to document that the appropriate PPE levels were used. The Parsons supervisor will submit these results to DuPont and Parsons Health and Safety weekly.

This plan describes the air sampling approach that will be implemented.

The objective of air sampling is to assess concentrations of dust and COC's in both work area and at the site perimeter. This will be accomplished by sampling over an 8 to 10-hour period corresponding to a construction day for a representative number of days over the duration of the construction work.

The target compounds to be sampled will consist of dust (PM<sub>10</sub>), along with the contaminant metals (arsenic, lead, and cadmium). The PM<sub>10</sub> is selected as the dust type to sample as it is invisible in the ambient air and is the basis for State and National ambient air quality 24-hour particulate standards.

To augment the work area sampling, as well as the real-time dust monitoring, meteorological data will be continuously recorded from the beginning to the end of the remediation work using an on-site meteorological monitoring station located in a central area of the Site. The station will record the following parameters:

- wind speed;
- wind direction;
- air temperature;
- relative humidity (RH);
- barometric pressure; and
- precipitation.

The meteorological station will be located in an area that is clear of buildings, trees, or other obstructions, at a height of approximately 10 feet above ground or more, in accordance with USEPA citing and exposure criteria (USEPA 2008).

### 1.1 Methods of Work Area Air Sampling

The data collection method consists of time-integrated manual air sampling with off-site laboratory analysis of PM<sub>10</sub> and PM<sub>10</sub>-metals. The sections below provide a brief description of the types of instruments, detection limits, and any applicable procedures.

#### PM<sub>10</sub>

PM<sub>10</sub> samples will be collected via a low-volume sampling method, coupled with pre- and post-sampling gravimetric analyses of the sample filters. The low-volume sampling method with use of a size-selective inlet with a cut point of 10 microns is a precise and accurate method that closely tracks the USEPA Federal Reference Method (FRM) for determination of PM<sub>10</sub> concentrations in the ambient air.

The MiniVol TAS PM<sub>10</sub> sampler will be mounted on elevated platforms such as posts, poles or tripods to provide sampling at an approximate "breathing zone" height of 1.5 to 2 meters above the ground.

#### Metals

Trace metal concentrations will be determined by combining the low-volume sampling method with USEPA's IO-3 Method (Chemical Species Analysis of Collected Suspended Particulate Matter) for inorganic compounds. The exposed filters will be submitted to a laboratory for chemical analysis of lead, arsenic, and cadmium.

Since trace metal levels are determined through chemical analysis of collected PM<sub>10</sub> filter samples, the corresponding ambient concentrations (i.e., ug/m<sup>3</sup>) will also be measured and reported as 8- to 10-hour integrated averages.

The analytical detection limits for the metals must be low enough to measure trace background levels in the air samples and allow comparison to appropriate reference values. **Table 1** presents background concentrations reported in the literature for each target metal:

**Table 1**  
**Reported Background Air Concentrations for Metals**

Parameter	Concentration ( $\mu\text{g}/\text{m}^3$ )	Source
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Arsenic (As)	<0.001 – 0.03	ATSDR
Cadmium (Cd)	< 0.01	ATSDR

**Table 2** gives the recommended minimum analytical detection limits based on the lower of the ambient air standards/guidelines or typical background concentration values for each parameter:

**Table 2**  
**Minimum Detection Limits**

Parameter	Based on Standard/Guideline or Background Conc.	Detection Limit	
		( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{filter}$ )*
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	Low-end Background	0.0001	0.16
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	RBC – noncancer (annual)	0.001	1.6

Note: Recommended detection limits are one-tenth of the desired minimum measurement value for each parameter.

\* Based on a typical high volume air sample volume of 1600 cubic meters.

### **Laboratory Analysis**

All laboratory analyses for this program will be performed by Bureau Veritas, located in Novi, Michigan. The analytical work includes gravimetric determination of particulate matter on filters (pre- and post-sampling weights) and instrumental analysis of particulate matter for the three target metals by ICP-MS.

### **Meteorological Conditions**

A meteorological monitoring station will be employed that consists of sensors capable of continuously measuring wind speed, wind direction, temperature, RH, barometric pressure, and precipitation. The system will meet USEPA specifications for air quality monitoring studies. A **Met One Instruments Automet Model 466A** meteorological monitoring station (or equivalent) will be used for the meteorological monitoring component of the sampling program. **Attachment 1** also includes vendor specifications for the meteorological station.

## 1.2 Sampling Locations

One MiniVol PM<sub>10</sub> sampler will be located to meet the objectives of the work area air monitoring and consistent with forecast and/or observed winds for the construction day to ensure the collection of a downwind sample. For each sampling day, the sampler will be located in the downwind direction approximately 100 to 200 feet from the active work area. The sampler will be mounted on a tripod or equivalent to ensure sample collection in the breathing zone at a height of 1.5 to 2.0 meters. If winds change substantially during the construction day, then the sampler will be moved to the new downwind location at the same distance from the active work area.

## 1.3 Frequency and Duration of Sampling

PM<sub>10</sub> sampling will be performed at a single downwind location on a frequency of once per week. The sampling schedule will be rotated by day such that the first weekly sample will be collected on a Monday, followed by the next sample on Tuesday, and then Wednesday, Thursday, and Friday. This type of schedule will continue for the duration of the IRM, which is expected to take 5 to 6 months to complete, and will result in a total of approximately 22 to 26 PM<sub>10</sub> samples that will be submitted for metals analysis.

## 1.4 Data Management and Reporting

Data management begins with the assembly and initial review of all field materials including particulate filters and corresponding sampler run data, meteorological data, field log notes, and calibration forms. These data are reviewed prior to and subsequent to each sampling event.

At the conclusion of sampling, the particulate filter is returned to the laboratory for equilibration and final weighing to determine the PM<sub>10</sub> concentration. The filter will then be used by the laboratory for analysis and determination of metals. The laboratory will provide analytical results to Parsons within 5 days of receipt of each filter.

Meteorological data will be downloaded on a daily basis from the monitoring station. Data will be reviewed for consistency and completeness. Upon completion of all sampling, meteorological data will be processed into a “reader-friendly” format suitable for reporting meteorological conditions with concurrent sampling and real-time dust results.

A final data summary will be prepared presenting the results of each sampling event to include air sampling and meteorological data summaries.

All meteorological data and sampling records will be compiled and maintained by Parsons for project documentation.

## 1.5 Quality Assurance

### Air Sampling Personnel

Monitoring and sampling activities will be performed by appropriately trained and experienced individuals. Training will include completion of a 40-hour hazardous waste activities training course in compliance with OSHA Standard 29 CFR 1910, as well as an 8-hour refresher course within the last year. Monitoring personnel will also be experienced or trained in the calibration, operation, and routine maintenance of the specific monitoring equipment being used for the work area sampling.

### **MiniVol Air Sampler**

The PM<sub>10</sub> sampler will be calibrated prior to the start of the sampling program. The calibration procedures will conform to manufacturer's standard instructions (see Operations Manual in **Attachment 2**). This calibration will ensure that the samplers are functioning within the allowable tolerances established by the manufacturer and required on this program. Records of sampler calibration and instrument manuals will be maintained in a field notebook.

At the beginning and end of each sampling event the sampler will check the flow for proper operation. This check is required to verify the flow rate and calculating sample volume for each sample collected. This information will be recorded in a spreadsheet along with the lab-provided PM<sub>10</sub>/metals mass, the air concentrations for the sample collected.

### **Laboratory Instruments**

The laboratory will follow calibration procedures and schedules as specified in the relevant sections of the USEPA guidance documents or other established sampling methods and any subsequent updates that may apply.

### **Meteorological Monitoring System**

The meteorological monitoring station will be field-calibrated upon start-up. This consists of sensor-control calibration checks on the individual sensors and includes aligning the wind direction vane to true north. Once data collection begins, the system will not be moved.

The meteorological station is designed to run unattended in the field for long periods of time up to 6 months without requiring calibrations or maintenance. The duration of this program is expected to be up to 6 months; therefore, end-of-period calibration checks will be required and performed once the IRM is completed. Should a malfunctioning sensor be detected and replaced, the replacement sensor will be field-calibrated when placed into service. In addition, if the meteorological station is relocated or repositioned, the wind vane will need to be realigned to true north.

## **2.0 WORK SPACE PARTICULATE MONITORING**

Qualitative airborne dust monitoring will be conducted continuously throughout the project by all personnel on site. The first response to the generation of airborne dust will be the application of a water mist to reduce the migration of the dust followed by an adjustment to work practices to minimize dust generation.

An action level for worker exposure has been set at 2.5 mg/m<sup>3</sup> based on the average concentrations of site specific COCs.

### **2.1 Method of Air Monitoring**

Real-time measurements for dust particulates will be obtained using *personalDataRAM* or equivalent □for *Personal Data*-logging. The Thermo Electron Corporation *personalDataRAM* is designed to measure the concentration of airborne particulate matter (liquid or solid), providing direct and continuous readout as well as electronic recording of the information. In addition, an audible alarm will sound when a user-defined action level is exceeded. This unit operates as a passive air sampler. The *pDR-1000* passively samples (i.e., without a pump) the air

surrounding the monitor; air freely accesses the sensing chamber of the instrument by means of convection, diffusion, and adventitious air motion.

## **2.2 Monitoring Locations**

Visual monitoring for airborne dust will be performed continuously throughout the project. The contractor will be responsible for monitoring the work area to ensure proper worker PPE. In addition, the contractor will be held accountable for observing, reporting, controlling, and minimizing dust generation during all phases of the onsite work.

The contractor will periodically take measurements and use discretion in locating upwind and downwind areas from which to perform real-time dust monitoring. At various times the contractor may place a pDR- 1000 on equipment and/or a construction worker via a shoulder harness, working in the active areas. Real time readings will be collected in a potential worker's breathing zone to assess potential worker exposure to dust. Data will be downloaded and provided to the Parsons and DuPont Health and Safety Representatives for evaluation.

## **2.3 Frequency of Monitoring**

Monitoring for visible airborne dust emissions will be performed continuously during excavation activities by the entire onsite work force. The contractor will perform hourly real-time air monitoring using the pDR-1000 or equivalent during excavation and material-handling operations when potential lead, arsenic and cadmium-containing dust may be generated. Readings will be collected at least twice per day by Parsons. The real-time monitoring will not be conducted during inclement weather conditions (e.g., rain or heavy fog) because these conditions interfere with the equipment function and may damage the monitors. However, light precipitation will reduce the potential for the generation of dust so work can proceed under these conditions, even if the monitors cannot be operated. During these periods of operation, visual observations will be used to determine if dust emissions are being generated which require suppression measures.

## **2.4 Data Collection Requirements**

During all monitoring activities, it is essential that comprehensive data be collected relative to the tasks being performed. Observational data and periodic field readings of onsite monitors are to be recorded on the appropriate data record form, found in Attachment 3. Applicable chain-of-custody procedures must be maintained for all samples sent to an offsite laboratory for analysis.

## **3.0 PERSONNEL MONITORING**

Although dust suppression measures will be used, air sampling will also be performed to quantify concentrations of lead and arsenic in the air within the breathing zone to assess worker exposure levels.

### **3.1 Methods of Personal Air Sampling**

The contractor will perform air sampling for lead, arsenic, and cadmium in the worker's breathing zone using NIOSH Method 7300. Parson will perform the same tasks for their employees. Arsenic, cadmium, and lead will be analyzed by an American Industrial Hygiene Association (AIHA) approved laboratory. The results of these monitoring activities will be provided to the Parsons as they become available.

## **3.2 Sampling Locations**

Homogeneous Exposure Groups (HEGs) will be identified as part of this excavation and materials-handling phase of the project. Establishing HEGs is a recognized exposure assessment method for personnel performing similar activities where exposure potential would be predicted to be the same or reasonably equivalent. The DSR will identify personnel in each HEG to wear the personal monitoring devices.

### **3.2.1 Frequency of Sampling**

In general, dust samples will be obtained once the initial intrusive activity commences and will continue for several days in order to characterize potential worker exposures. Periodic monitoring will be conducted when work begins on a different portion of the Site, if a different type of operation is being initiated, or if employees are working with materials known to contain lead, cadmium, and arsenic at locations where monitoring was not performed previously. Air sampling will be performed for the duration of field activities conducted in hazardous areas of the site or after analyzing the sample data DuPont Health and Safety determine that air sampling is not required.

## **4.0 RECORD KEEPING**

All records will be compiled and maintained by Parsons for project documentation. The Contractor is also responsible for maintaining their monitoring data and providing a copy to Parsons on a weekly basis.

Records will include the following:

1. Pre-calibration (before personal air sampling begins)
2. Post-calibration (after personal air sampling has been completed)
3. Field observations
4. Calculations and chain-of-custody forms
5. Lead, and arsenic analytical results
6. Daily monitoring will be recorded in the log book
7. Downloaded electronic data from air monitor equipment

## 5.0 MINIMUM DATA REQUIREMENTS

The following lists the minimum data that are to be collected for sampling

Air pump/monitor data

Pump or instrument ID	Initial flow rate (L/min)
Final flowmeter setting	Calibration date
Final flow rate (L/min)	Calibrator type
Average flow rate (L/min)	Initial flow meter setting

Sample media information (filter cassettes)

• Field sample ID	Media type
• Lab ID #	Type sample

Sampling information

• Start date	Sample time
• Start time	Sample volume (L)
• End date	Sample volume (m3)
• End time	Analysis
• Sample time	

Task description (for personal monitoring)

• Employee name/area description	Job task
• Employer	Activity

Results

Total mass ( $\mu\text{g}$ ) (arsenic/lead lab results Lab result only)	Lab comments
--	--------------

## 6.0 ACTION LEVELS

The air-monitoring program at the Former DuPont East Chicago site consists of a combination of work zone, personnel (worker) monitoring for particulates (dust), and air sampling for lead, arsenic, and cadmium.

**Table 3** outlines the various action levels to be adhered to during the IRM.

**Table 3**  
**Action Levels**

Air-Sampling Instrument (Real Time)	Action Level	Action Taken when Action Level is Met or Exceeded
Work zone dust	2.5 mg/m <sup>3</sup> total dust	Additional dust control methods will be implemented and construction activities responsible for generating the dust may be temporarily suspended if dust control is not effective. Respirators may be worn by workers in the exclusion zone represented by the air-sampling results.
Lead	0.05 mg/m <sup>3</sup> (TWA 8 hours)	Results from personal lead sampling will be used to assess if respiratory protection for worker protection and safety is required.  TWA, time-weighted average.
Cadmium	PEL: 0.005 mg/m <sup>3</sup>	Results from personal lead sampling will be used to assess if respiratory protection for worker protection and safety is required.  .
Arsenic	0.01 mg/m <sup>3</sup> (TWA 8 hours)	Results from personal arsenic sampling will be used to assess if respiratory protection for worker protection and safety is required.  TWA, time-weighted average.

### **Action Level—Visible Monitoring**

The observation of airborne dust in the excavation area will be used as a primary action level by site project team personnel. If dust is visible in a localized area, dust suppression methods will be immediately implemented. If dust is visible from any active excavation area and is evident outside the active excavation area, engineering controls or alternate dust control methods will be initiated at once. As stated previously, the dust suppression primarily consists of using water to

wet down an area of dust generation. Covering stockpiles with tarps or wetting the stockpile with water are effective dust suppression methods.

## **Attachments**

## **Attachment 1 – Equipment Specifications**

# MiniVol<sup>®</sup> TAS

Tactical Air Sampler

# AIR METRICS



The MiniVol Tactical Air Sampler (TAS) is based on the original MiniVol air sampler developed jointly by AirMetrics and the United States Environmental Protection Agency (EPA) in 1990. Implementing patented low-flow technology, the TAS delivers precise and accurate results in a lightweight compact device.

The MiniVol TAS is a versatile platform that is attractive to end-users worldwide. With a broad range of customers, both domestic and international, the reliable and proven MiniVol sampling system has made a place for itself in the global air quality industry.

Improving upon the best in portable air samplers, the TAS leads the way for the next generation of innovative air sampling equipment.

**The next generation  
of innovative air sampling  
equipment**

**AIR METRICS**

2095 Garden Ave., Suite 102 ■ Eugene, Oregon 97403 ■ (541) 683-5420  
(541) 683-1047 (FAX) ■ [www.airmetrics.com](http://www.airmetrics.com)

# FEATURES

# MiniVol® TAS

Tactical Air Sampler

## LOW MAINTENANCE

All sampler components were designed for maximum durability and minimal maintenance. Even the routine cleaning of the size selective inlets has been simplified with the design of the Easy Maintenance Target (EMT).

## LIGHTWEIGHT & PORTABLE

The compact sampler design weighs less than 10LBS when fully configured. The sampler and accessories are easily stored in an all-in-one transport case.

## WELL EQUIPPED

Duplicates of major sampler components are included to simplify field work. The extra battery, filter holder and size selective inlet can be serviced while the duplicates are in use. The standard PM-10 sampler includes:

- |                              |                            |
|------------------------------|----------------------------|
| 1 Pump Module                | 2 PM-10 Impactors          |
| 2 Louvered Inlets            | 2 Filter Holder Assemblies |
| 2 Li-Ion Battery Packs       |                            |
| 1 Battery Charger            |                            |
| 1 Universal Mounting Bracket |                            |

## ALL-WEATHER CASE

Durable polypropylene copolymer case features a double-throw latch system for secure closing and easy opening.

## EZ-INSERT BATTERY

The high-density Li-Ion pack weighs under two pounds and can be fully charged in less than five hours. The battery slides securely into the front panel for 60+ hours of sampling.

## TECHNICAL SPECIFICATIONS

### Active flow Control

**Flow range:** 0-10 LPM

**Nominal flow:** 5LPM

**Sampler Dimensions:** 10" x 12" x 7"

**Sampler Weight:** 9.8LBS (fully configured)

**Transport Case:** 19.75" x 12" x 18"

**Shipping Weight:** 37LBS

**Li-Ion Battery** 14.8V / 118 Watt Hours

**Battery Charger:** Input 100-240VAC, 47-63Hz  
Output: 18VDC, 2A

## MULTIPLE MOUNTING OPTIONS

A universal mounting bracket allows for attachment to vertical or horizontal surfaces, the fold-up lightweight tripod allows for free standing operation.

## POWER OPTIONS

The TAS functions via AC/DC or solar power for urban or remote location sampling.

## HIGH EFFICIENCY PUMP

Airmetrics introduces a double diaphragm pump designed specifically for the TAS. The pump incorporates Airmetrics' unique "laminar flow valve technology" and features a precision Swiss ball bearing motor with precious metal commutation, designed for a service life in excess of 10,000 hours.

## SAMPLING MEDIA

The TAS utilizes standard US EPA FRM 47mm cassettes. A wide variety of filter media is available for specific sampling applications.



**AIR**METRICS

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# AIRMETRICS

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## MiniVol MRI (Mini Reference Impactor)



**The Mini Reference Impactor (MRI) is Airmetrics latest innovation.** The MRI is a near perfect PM<sub>10</sub> particle size separator that greatly reduces routine impactor maintenance. AirMetrics has enhanced the geometry of the EPA Federal Reference Method (FRM) PM<sub>10</sub> inlet for integration into the MiniVol TAS (Tactical Air Sampler). The new impactor has a 10.0 µm cut-point and no significant internal losses\*. The dry inertial separator requires no grease, oils or special substrates. The no-tools monthly maintenance (as recommended by EPA) can easily be performed in the field, and consists of simply unscrewing the impactor and dumping out the collected particles and rinsing with water or solvent.

MRI (Mini Reference Impactor)

The MRI was designed in response to feedback from customers such as the US Army – CHPPM, who use the MiniVol in remote locations, and under adverse conditions, The new MRI significantly reduces field maintenance while maintaining the cut-point of the US EPA FRM PM<sub>10</sub> inlet.

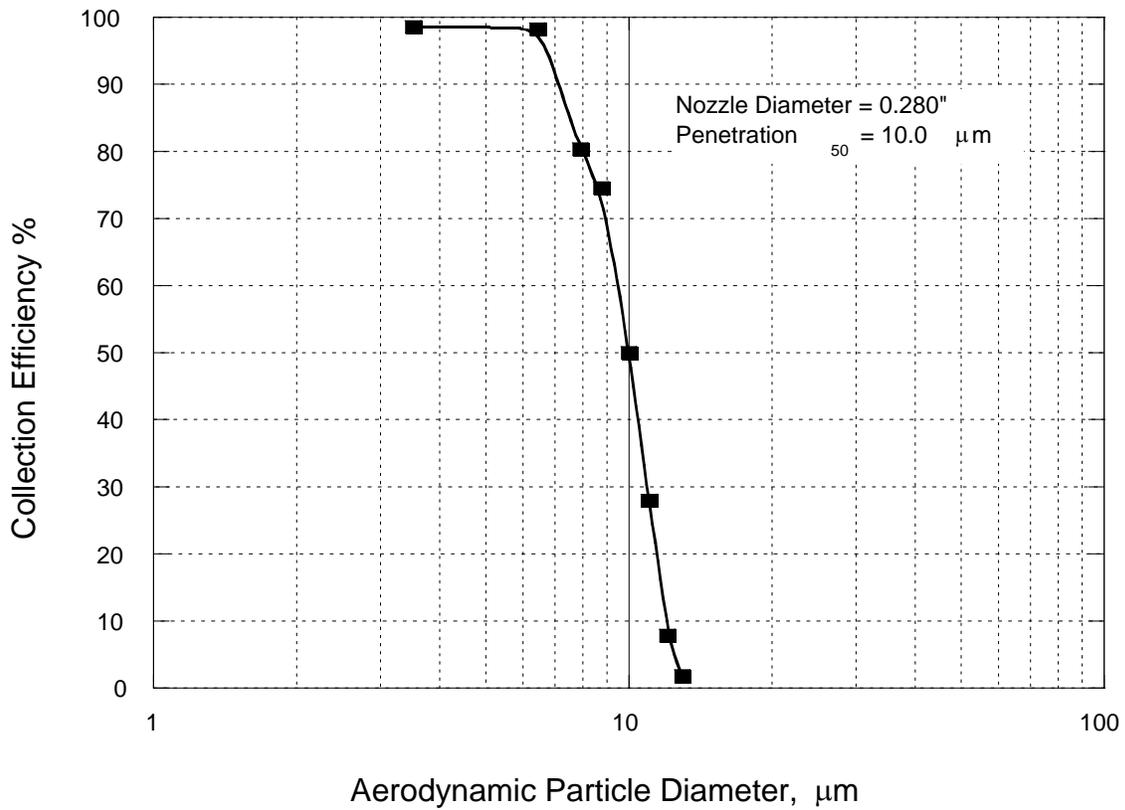


Designed for Easy Maintenance



MRI Inlet Assembly

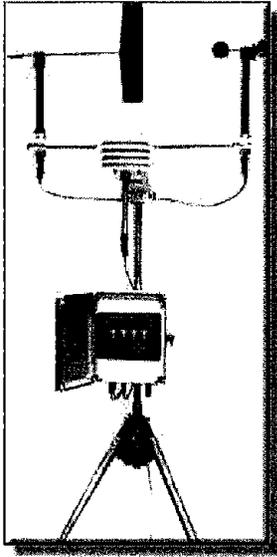
\*see calibration results on reverse side of page.



Aerodynamic dia., $\mu\text{m}$	Impaction plate, %	Internal Losses, %	After Filter (Penetration), %	Total %
3.52	1.2	0.2	98.6	100
6.43	1.6	0.1	98.3	100
7.92	19.6	0.0	80.4	100
8.73	25.3	0.1	74.6	100
10.01	49.9	0.1	50.0	100
11.03	71.9	0.1	28.0	100
12.06	92.0	0.2	7.8	100
12.96	98.1	0.1	1.8	100

The MRI calibration was performed at the University of Minnesota, Department of Mechanical Engineering, Particle Technology Laboratory under the direction of Virgil A. Marple, PhD and Bernard A. Olson, PhD.

# Met One Automet Meteorological Monitoring System



## Automet 466A Includes:

- 466A datalogger
- 1 mounting "U" bolt
- 4 mounting "C" clips
- RH/Temp sensor
- Barometric sensor
- WS/WD sensor
- Rain gauge
- Guy assembly (3 steel cable w/spring loaded anchors)
- AC Power cord
- AC/DC battery charger
- RS232 9-pin data cable
- 12 V battery
- 3 meter stand
- Software, system, & set-up manual

## Specifications:

- Approximate Shipping Weight: Datalogger & sensors 60 lbs, 3 meter stand 20 lbs
- Shipping Size: Datalogger & sensors 28" x 24" x 16", 3 meter stand 8" x 8" x 52"

## Sensor Specifications:

- **Wind speed** (model 34A- wind speed and wind direction combined):
  - Range: 0-155 mph (0-69 m/s)
  - Starting threshold: 0.9 mph (0.4 m/s)
  - Accuracy: <22.7 mph: .25mph (0.1 m/s), >22.7 mph: +/- 1.1% of true
- **Wind direction** (model 34A):
  - Range: Mechanical 0-360° and Electrical 0-356°
  - Starting Threshold: 0.9 mph (0.4 m/s)
  - Accuracy: +/-4°
  - Damping ratio: .25 Std (.4 to .6 optional)
  - Resolution: 0.5°
- **Temperature** (083C-1): Installed in a model 5980 radiation shield to reduce errors due to direct solar radiation.
  - Range: -50°C to +50°C
  - Accuracy: +/-0.1°C throughout range
- **Relative humidity** (083-1):
  - Sensing element: Thin film capacitor
  - Range: 0-100% relative humidity
  - Temperature range: -20°C to +60°C
  - Response time: <15 seconds at 68°F of final (with filter)
  - Accuracy: 0-10% RH +/-3%, 10-90% RH +/-2%, 90-100% RH +/-3%
  - Temperature coefficient: 0.04% RH/°C
  - Output: 0-1.00 VDC – Standard

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Fax: (847) 934-8260  
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# Met One Automet Meteorological Monitoring System

- Input power: 4 MA at 12 VDC battery
- **Barometric pressure (090D/091):**
  - Resolution: Infinite
  - Range: 26-32 in. Hg (up to 1500 feet elevation)
  - Temp operating range: -40°C to +65°C
  - Temp compensated range: -18°C to +65°C
  - Accuracy: +/-0.04 in Hg (+/-1.35 mb) or +/-0.125% FS
  - Power requirement: 11 mA @ 12 VDC, typical
  - Sensor output: 0-1 VDC
  - Sensor: Solid state pressure transducer
- **Rainfall (370):** Measures both rain and snowfall
  - Accuracy: at 0.5"/hour +/-0.5%, at 1" to 3"/hour +/-1.0%
  - Switch: Reed type rated at 10 mA, 28VDC
- **Solar radiation (096-1):** Optional
  - Sensor: Silicon solar cell mounted in a cosine corrected miniature head
  - Spectral response: 400 to 1100 nanometers, 0.4 to 1.1 microns
  - Sensitivity: 8.0 mV/kwatt meter<sup>-2</sup> with 100 Ohm load (varies from sensor to sensor)
  - Impedance: 100 Ohm load (dependent upon sensor sensitivity)
  - Temp dependence: +/-0.15%/degree C, maximum
  - Linearity: +/-1% from 0 to 3000 watts meter<sup>-2</sup>
  - Response time: 10 microseconds (10% to 90%)
  - Cosine response: Corrected up to 82° incident angle. Azimuth error <1% over 360° at 45° elevation.

## Data System Specifications:

- Power Requirements: 12 VDC +/- 10%
- Power Sources: Internal battery pack 12VDC and 120 VAC to 12 VDC power module
- Outputs: RS-232 for radio transceiver, RS-232 for dial-up modem (radio & modem share common RS-232 port), RS-232 to remote display
- Flexible averaging periods: 1, 5, 15, or 60 minute
- Password protection
- Auto-programming: plug in a sensor and the Automet identifies the sensor type, determines its range and writes the programming to record the sensor data.
- Automatic Alarm Functions: two alarms set to any of the channels. These can be set to signal the operator, or to turn the equipment on or off if one of the parameters is out of the predetermined range.

## Rental/Application Notes:

1. Micromet Plus® (version 2.2) software is loaded on a laptop and included with the met station. It integrates an easy to use page format for quick communication, data collection, and data reporting. The Console Program simplifies station identification and parameter setup. The Graphic Program can be used to generate plots and wind roses that thoroughly comply with the EPA and other requirements.
2. Additional sensors, a 10 meter tower, and solar panels are also available upon request.
3. When renting, equipment must be returned in its original packaging.

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**Attachment 2 – PM<sub>10</sub> Sampler (MiniVol TAS Rev. 1.2)**  
**Operation Manual**

# MiniVol™ TAS

Tactical Air Sampler

## Operation Manual

Rev. 1.2



**AIR METRICS™**  
INNOVATIVE AIR SAMPLING EQUIPMENT

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# 1 INTRODUCTION

The MiniVol™ Tactical Air Sampler (TAS) is a portable ambient air sampler for particulate matter that can also be configured for sampling various air toxics. The patented low flow technology used in the MiniVol™ TAS was developed jointly with the U. S. Environmental Protection Agency (EPA) in an effort to address the need for portable air pollution sampling technology.

While not a reference method sampler, the mass concentrations of the MiniVol™ TAS gives results that closely agree with reference method concentrations. Both accurate and precise, the battery operated, lightweight MiniVol™ TAS is ideal for sampling at remote sites or areas without power. In addition, the low cost of the sampler allows a network of MiniVol™ TAS to be deployed at a fraction of the cost for a similar reference method network.

The MiniVol™ TAS features a 7-day programmable timer, a constant flow control system, an elapsed time totalizer, rechargeable battery packs, and an all-weather enclosure.

## 1.1 Principles of Operation

The MiniVol™ TAS is basically a pump controlled by a programmable timer which can be set to make up to six "runs" within 24 hours or throughout a week. When used outdoors it may be hung from a universal mounting bracket mounted on a variety of structures, utility poles, trees, fence posts or on the ground using a tripod.

The sampler is equipped to operate from either AC or DC power sources. In the DC operational mode, the sampler operates from a battery pack, thus making the sampling site independent of line power. The MiniVol™ TAS comes with two battery packs to accomplish continuous field sampling. A charged battery pack is capable of operating the sampler for a minimum of 24 hours on a single charge.

The sampler is equipped with two "fault circuits":

- A **low battery circuit** automatically shuts the sampler down should the lithium-ion (Li-ion) battery fail to supply sufficient voltage (above 13.0 volts) to the pump. This feature helps protect the battery which could be damaged if used continuously at low voltage. A "low-battery" indicator light alerts the operator of this condition.
- A **low flow circuit** monitors the flow rate. Should excessive accumulation of particulate matter or some restriction in the tubing cause the air flow to fall below approximately 10% of the set flow rate, the sampler shuts down and a "low flow" indicator light alerts the operator.

An Elapsed Time Totalizer linked in parallel with the pump records the total time in hours of pump operation.

## 1.2 Particulate Matter Sampling Mode

In the particulate matter (PM) sampling mode, air is drawn through a particle size separator and then through a filter medium. Particle size separation is achieved by impaction. Critical to the collection of the correct particle size is the correct flow rate through the impactor. For the MiniVol™ TAS, the actual volumetric flow rate must be 5 liters per minute (5 lpm) at ambient conditions. To assure a constant 5 lpm flow rate through the size separator at differing air temperatures and atmospheric pressures, the sampler must be adjusted for each sampling project (see Section 8.2 "Sampling at Ambient Conditions").

Impactors are available with a 10 micron cut-point (PM<sub>10</sub>) and a 2.5 micron cut-point (PM<sub>2.5</sub>). Operating the sampler without an impactor allows for collection of total suspended particulate matter (TSP).

The inlet tube downstream from the filter takes the air to the twin cylinder diaphragm pump. From the pump, air is forced through a standard flowmeter where it is exhausted to the atmosphere inside the sampler body.

The programmable timer will automatically turn the pump off at the end of a sampling period. The sampler must then be serviced and set up for the next sampling period. Servicing includes removing the filter holder with the exposed filter inside from the sampler, and attaching a new filter holder with a fresh filter and replacing the battery pack with a fully charged pack.

### 1.3 Air Toxics Sampling Mode

In the air toxics sampling mode the particle size separator and filter holder assembly are replaced by an adsorbent cartridge selected by the user. A wide variety of sampling media are available. Contact Airmetrics for information on adapting your selected media to the sampler.



The sampling technique used by the MiniVol™ TAS is a modification of the PM<sub>10</sub> reference method described in the U. S. Code of Federal Regulations (40 CFR part 50, Appendix J). Under this criteria, a PM<sub>10</sub> sampler must have: 1) a sample air inlet system to provide particle size discrimination, 2) a flow control device capable of maintaining a flow rate within specified limits, 3) means to measure the flow rate during the sampling period, and 4) a timing control device capable of starting and stopping the sampler.

The Airmetrics MiniVol™ TAS meets all of these specifications. It is equipped with: 1) an inlet impactor capable of separating particulate matter to  $\leq 10 \mu\text{m}$ , 2) a flow control device which will maintain a specified flow rate, 3) a flowmeter to measure the flow rate during the sampling period, 4) an elapsed time meter, and 5) a programmable timer that starts and stops the sampler unattended.

The MiniVol™ TAS flow rate is less than the flow rates used by reference method devices. The lower flow rate results in a greater deviation in accuracy at low concentrations of particulate matter where precision can be lost through the handling and weighing of the sample. However, at moderate particulate concentrations the sampler produces results that are precise and comparable to reference method samplers. While the MiniVol™ TAS sampling method is not a reference or equivalent method, it has proven to be an excellent indicator of absolute ambient particulate concentrations. The data collected by the sampler still serves as a useful supplement to data generated by reference methods.

---

## 2 GETTING STARTED

### 2.1 Inspecting Components

A standard MiniVol™ TAS comes packed in an all weather carrying case containing the following;

- 1 MiniVol™ TAS Pump Module
- 2 Filter Holder Assemblies with customer selected size selective inlets.
- 2 Battery Packs and a Battery Charger
- 1 All Weather Carrying Case
- 1 Universal Mounting Bracket or Light Weight Tripod
- Operation Manual

On receipt, inspect the contents of the case to account for all components. Compare the equipment delivered with the enclosed packing slip. Notify Airmetrics of any missing or damaged equipment. (See Section 10).

### 2.2 Batteries

1. Connect the charging plug of the battery charger to the charging jack on the battery pack.
2. Plug the charger into an AC outlet.
3. The LED on the top of the battery charger will light indicating the status of the battery being charged. When this light is green the battery is charged. A fully discharged battery requires about 5 hours to be completely recharged.

**Battery Charger LED Status Modes**

LED Status	Battery Status
Green	Battery Fully Charged
Red	Battery Partially Charged
Flashing Red	Battery Fully Discharged

4. The batteries have built in protection circuitry that may be activated if the battery output is shorted. The battery may be reset by plugging it into the battery charger.



Airmetrics suggests the batteries not be stored in the sampler. The life of Lithium-Ion batteries can be prolonged by storing the batteries in a cool environment at less than a full charge (about 40%). Storing the battery in the sampler will eventually deplete the battery and will decrease its useful life.

**Permanent Capacity Loss versus Storage Conditions**

Storage Temperature	40% Charge	100% Charge
0 °C (32 °F)	2% loss after 1 year	6% loss after 1 year
25 °C (77 °F)	4% loss after 1 year	20% loss after 1 year
40 °C (104 °F)	15% loss after 1 year	35% loss after 1 year
60 °C (140 °F)	25% loss after 1 year	40% loss after 3 months

Source: *BatteryUniversity.com*

## 2.3 Turning the Sampler On/Off

The ON/AUTO/OFF button on the Programmable Timer allows the operator to manually turn the sampler on or off (or to place it in the "Auto" mode in which it is controlled by programmed on/off sequences). As the ON/AUTO/OFF button is pressed, a bar at the lower edge of the LCD display moves horizontally over the words "On", "Auto" and "Off" which are printed on the timer case (see Figure 2.1).

With the battery pack inserted into the sampler, press the ON/AUTO/OFF button until the bar is above the "ON" legend. The red power indicator (to the right of the ON/AUTO/OFF button) should light and the pump motor should start.

If the timer display does not respond, press the small black reset button located next to the red power led.

While the sampler is running press the ON/AUTO/OFF button, until the bar indicator is over the "OFF" legend. The power indicator light will go off and the pump will stop running.



Figure 2.1 - Programmable Timer

## 2.4 Programming the Timer

The Programmable Timer can be set to run up to six on/off cycles within a 24 hour period, as well as to run for separate time periods on separate days within a 7-day period. To set the timer, first set the real-time clock to establish the correct time frame in which the cycles are to run. Next, enter the on/off times at which the programmed cycles are to begin and end. Finally, set the timer to "Auto" mode.

Refer to Figure 2.1 when performing the following procedures.

### 2.4.1 Setting the Real-Time Clock

1. DAY SET: Hold down the CLOCK button and press the WEEK button until the correct day appears at the top of the display.
2. TIME SET (Hour): Hold down the CLOCK button and press the HOUR button until the display indicates the correct hour. You may have to cycle through the hours twice to obtain the proper AM or PM (on the left side of the display). Seconds will automatically reset to zero.
3. TIME SET (Minutes): Hold down the CLOCK button and press the MIN button until the display indicates the correct minutes. Seconds will automatically reset to zero.

### 2.4.2 Setting the On/Off Times

1. Press the PROG button once. 1<sup>ON</sup> will appear near the lower left corner of the display indicating that the Power-on time for the first cycle is ready to be programmed.
2. Press the HOUR and MIN buttons to enter the power-on time for the first cycle.
3. Press the WEEK button to select the desired day. The days appear along the top of the display. Continuously pressing the WEEK button will sequentially display "Mo Tu We Th Fr Sa Su", "Mo", "Tu", "We", "Th", "Fr", "Sa", "Su", "Mo Tu We Th Fr", "Sa Su" and finally back to "Mo Tu We Th Fr Sa Su". When more than one day is displayed, these days will all have the same power-on time.

4. After you have entered the power-on time and date for the first cycle, press the PROG button. 1<sup>OFF</sup> now appears on the display to indicate that the power-off time for the first cycle is ready to be programmed. Repeat steps 2 and 3 to enter the desired power-off time.
5. The power-off time does not have to occur on the same day as the on time. In this way, sampling may start on one day and end on the next day.
6. Press the PROG button again. 2<sup>ON</sup> appears on the display to indicate that the second power-on time is ready to be programmed. Repeat steps 2 through 4 to enter the remaining power-on/power-off times (up to 6 on/off times).
7. Press the PROG button to step through the times you entered to make sure they are correct. Press the RST/RCL button to disable (ReSeT) or reactivate (ReCaL) any time entries. When you disable a particular power-on/off entry, four dashes will appear instead of the time. When you reactivate an entry, it will return to the values that were set before you performed a reset.
8. Be sure to clear or reset all unwanted time entries prior to sampling in the AUTO mode. **Both** ON and OFF entries need to be disabled for the unwanted programs to be inactive.
9. Press the CLOCK button to return to the real-time clock display.
10. Press the ON/AUTO/OFF button until the bar is positioned above the desired setting (see below).

### 2.4.3 Setting the Time to "ON," "AUTO," and "OFF" Modes

The ON/AUTO/OFF button is used to manually turn the sampler on or off, or to place it in the "Auto" mode. A bar on the lower edge of the LCD display moves from "Off" to "Auto" to "On" as the button is pressed. In the "Auto" mode the sampler is controlled by the programmed on/off sequences.

- To manually turn the sampler ON, press the ON/AUTO/OFF button until the bar on the lower edge of the display is above the "ON" legend. The pump will start and the power indicator will light.
- To manually turn the sampler OFF, press the ON/AUTO/OFF button until the bar is above the "OFF" legend.
- To set the timer to "AUTO" mode in which the sampler will be automatically controlled by programmed sequences, first turn the sampler OFF. Then press the ON/AUTO/OFF button until the bar is above the "AUTO" legend.

## 2.5 Checking for Leaks

To check for leaks, remove the impactor/filter holder assembly from the inlet tube. Make sure that the inlet tube is fully extended and the compression fitting is tight. Cover the air inlet tube with the palm of the hand while the pump is running. The ball in the flowmeter should drop to zero and remain there without movement. *Note: the “Low Flow” indicator LED will activate and the sampler will shutdown after 15-20 seconds, push the reset button twice to reactivate the sampler.* If the ball does not drop to zero, a leak exists somewhere in the hoses and fittings between the inlet and the flowmeter. Leaks on the *inlet* side of the pump are especially critical, since flow measurement will not accurately reflect the amount of air passing through the filter. The sampler will be measuring air passing through the filter, *plus* whatever air may be entering through the leak. If there is a leak use the following procedures to isolate the leak. After each procedure check the sampler for leaks before moving to the next step.

- Verify that the inlet tube is extended and the compression fitting is tight.

Remove the four faceplate thumbscrews and the sampler mount thumbscrew to access the sampler pump and plumbing.

- Verify that all push-on hose fittings are secure.
- Check for cracks in the flowmeter inlet and outlet.
- Check for cracks in the pulse dampener.
- Check and tighten all compression fittings.

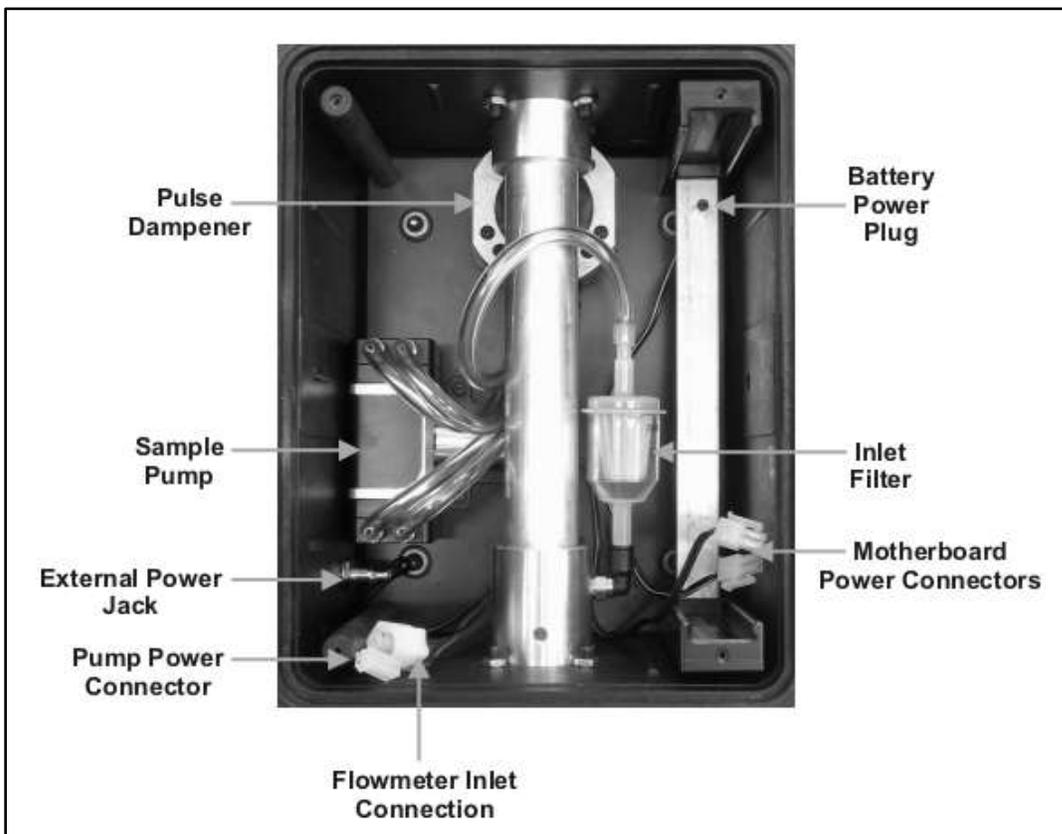


Figure 2.2 – Interior Sampler Case Hardware

## 3 CONTROLS AND ADJUSTMENTS

### 3.1 All Operating Modes

The following controls (see Figure 3.1) are used in the operation of the MiniVol™ TAS.

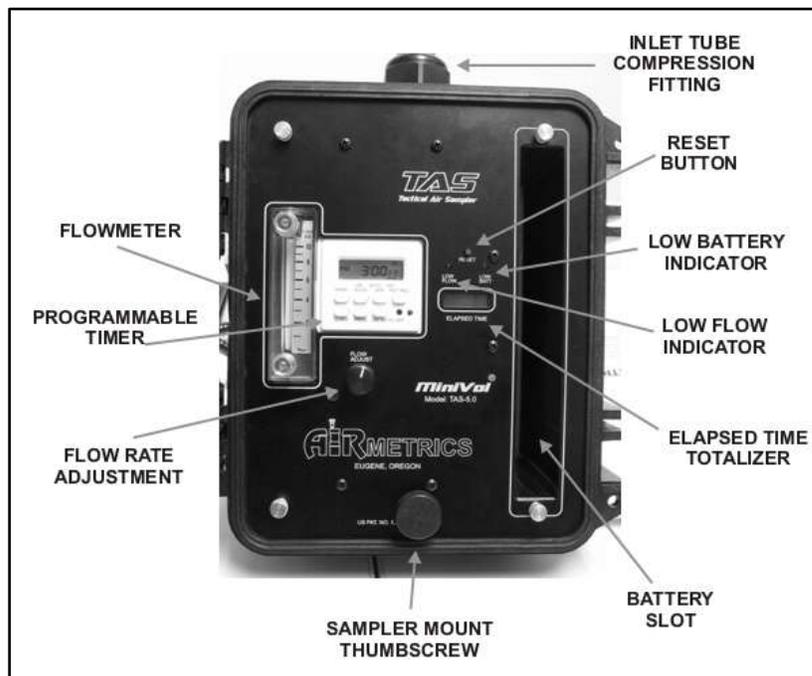


Figure 3.1 - Sampler Layout

### 3.2 Elapsed Time Totalizer

The Elapsed Time Totalizer displays the total number of hours, with a resolution of tenths of hours that the pump has run. The totalizer accumulates time only while the pump is running. It cannot be reset to zero. The total hours should be recorded at the beginning and end of each sampling period.

### 3.3 Programmable Timer

The Programmable Timer controls the on/auto/off operation of the sampler. The timer allows up to six sampling times to be preprogrammed over twenty-four hours or throughout a week (see Section 2.4 "Programming the Timer").

### 3.4 Flowmeter

The Flowmeter indicates the flow rate of air through the system in liters/minute. The flow rate is adjusted using the "Flow Rate Adjustment". The flowmeter readings must be taken from the center of the ball.

### 3.5 Flow Rate Adjustment

The Flow Rate Adjustment knob varies the sampler's flow rate as indicated by the level of the ball (read from the center of the ball) in the flowmeter. Slowly turn the knob until the air flow reaches the desired level. When adjusting the flow rate the two indicator LED's will light, this lets the operator know that the flow set point is being changed. The LED's will turn off when the microcontroller has stored the set point. **Do NOT turn the sampler off while the LED's are lit.** Doing so will cause the microcontroller to store an erroneous set point. If this happens the sampler may be returned to factory presets by momentarily rotating the Flow Rate Adjustment knob immediately after turning on the sampler. This will be indicated by the two indicator LED's lighting up. **Do NOT make any adjustments until the LED's have turned off.**

### 3.6 Low Flow Indicator

The Low Flow Indicator LED is activated when the flow sensor determines that the air flow rate has dropped by approximately 10% below the set flow rate

If a low flow condition exists for an extended period of time (several seconds), the flow sensor will shut off the sampler's pump and turn on the Low Flow Indicator LED. The red LED will flash to alert the operator that the sampling was aborted because air flow could not be maintained at the desired rate. The pump is turned off because the cut-point of the PM size selective inlet is determined by the air flow rate through the inlet. For the inlet to have constant particle size cut-point, it is necessary to maintain a constant flow rate throughout the sampling period.

When a low flow cutoff condition arises, the error can be cleared by pressing the "Reset Button" twice. (see Figure 3.1).

### 3.7 Low Battery Indicator

When lit, the Low Battery Indicator means that the battery voltage has dropped to a limit too low (13.0 volts) to permit continued operation. When the low voltage limit is reached, the pump shuts off and the low battery indicator turns on and remains lit to alert the operator. If the pump was not turned off and the battery voltage continued to drop, the battery could be permanently damaged or its life significantly shortened.

When a low battery condition arises, the error can be cleared by pressing the "Reset Button" twice. (see Figure 3.1).

### 3.8 Low Flow / Low Battery Reset Button

The Reset Button momentarily interrupts power to the sampler then restarts the sampler when the system has been shut down due to low flow or low battery voltage conditions. **Any error condition requires the reset button to be pushed twice to reset the sampler.** This allows the sampler to retain the error condition if it loses power since the power needs to be interrupted twice for a complete reset (see "Low Flow Indicator" and "Low Battery Indicator" above).

### 3.9 ON/AUTO/OFF Button

The ON/AUTO/OFF Button manually turns the sampler on, off, or places it in the "Auto" mode. In the "Auto" position, the sampler is controlled by whatever programmed on/off sequences have been entered. A bar on the lower edge of the Programmable Timer's LCD display moves from "On" to "Auto" to "Off" as the button is pressed (see "Programming the Timer" in Section 2.4).

## 4 PARTICULATE MATTER SAMPLING

Sampling procedures for TSP, PM<sub>10</sub>, and PM<sub>2.5</sub> are identical except for the configuration of the impactor/filter holder assembly.

### 4.1 Consumables

During particulate matter sampling, the following consumables are needed for proper operation of the MiniVol™ TAS:

- Impactor grease - Glisseal® Ht, Apiezon® M Grease, etc.
- 47 mm filters - pure quartz, pure Teflon®, Teflon®-coated glass, etc.
- Petrislides™ - for storage and transport of the filters.

A microbalance accurate to one microgram is needed to weigh the filters.

Airmetrics offers all of the above consumables, along with filter weighing services.

### 4.2 Siting Requirements

Siting recommendations in this manual conform to the U. S. Environmental Protection Agency requirements as stated in the U. S. Code of Federal Regulations (40 CFR part 58, Appendix E). When operating the sampler in locations under another jurisdiction, the operator should follow the appropriate guidelines.

The MiniVol™ TAS should be positioned with the intake upward and should be located in an unobstructed area at least 30 cm from any obstacle to air flow. Accessibility to the unit under all weather conditions, along with safety and security of the monitoring personnel and equipment, should be prime considerations.

### 4.3 Universal Mounting Bracket

The MiniVol™ TAS universal mounting bracket is designed to be used in a variety of situations. It comes configured to be mounted on a 2" OD or smaller pipe, fence post or other metal tubing. The quick release bracket extension also allows the bracket to be mounted either vertically or horizontally (see Figure 4.1). By removing the stainless steel u-bolts and plastic vee blocks, the bracket may be strapped to a larger diameter object such as a light or power pole. Using the included ratchet straps (see Figure 4.1)



Figure 4.1 – Vertical Mount

Horizontal Mount

Strap Mount

## 4.4 Preparing the Sampler

- **TSP** - Remove the impactors from the filter holder assembly prior to sampling. Since the impactor will not be used, greasing and cleaning of the impactor's target disk need not be done.
- **PM<sub>10</sub>** - Use a PM<sub>10</sub> impactor in the filter holder assembly (see Figure 4.2). Greasing and cleaning of the impactor's target disk should be performed initially and after every fifth sample (or more often if heavy loading is observed). Refer to Section 7, Maintenance, "Impactor Cleaning."
- **PM<sub>2.5</sub>** - Use a PM<sub>2.5</sub> impactor in the filter holder assembly and a PM<sub>10</sub> impactor in a multiple impactor adapter mounted on the filter holder assembly tube (see Figure 4.3). Greasing and cleaning of the impactors' target disks should be performed initially and after every fifth sample (or more often if heavy loading is observed). Refer to Section 7, Maintenance, "Impactor Cleaning."

To remove impactors, use your thumb to simply push the impactor out of its tube from bottom to top. When correctly installed, the impactor's top is flush with the surrounding filter holder assembly tube or multiple impactor adapter tube.

Before transporting the MiniVol™ TAS to the field, perform a laboratory check to determine if it is operational. Turn the sampler on and observe the motor performance. Perform a leak check. Investigate and correct any malfunctions before proceeding. Perform a single-point flow rate check using a calibrated orifice, soap-bubble meter or other flow measuring device of known accuracy and compare to the curve established during calibration. The flow should be within  $\pm 10\%$  of 5 lpm at current conditions. If the unit fails to operate in this range, check the sampler for obvious leaks and malfunctions. The sampler must be repaired or recalibrated if the flow criteria are not met.

## 4.5 Flow Rate

The particle size cut point of the impactor is a function of the velocity with which the air stream passes through the impactor and impacts on the target. The impactor is designed to have the correct cut point at an air flow rate of 5 lpm at ambient conditions. Since the density of air and the behavior of the flowmeter are functions of the ambient air temperature and atmospheric pressure, a flow rate set point must be calculated for each different sampling project.

The sampler air flow calibration curves that are supplied with each sampler contain the necessary information needed to determine the flowmeter set point for a particular ambient condition. Section 8.2 contains the complete instructions in calculating the flow set points.

## 4.6 Flowmeter Calibration

The sampler should be recalibrated once a year and/or if the flowmeter is replaced.

## 4.7 Impactor/Filter Holder Assembly

Depending on the required particle size separation, the configuration of the impactor/filter holder assembly changes. The filter holder assembly contains a filter cassette in which the 47mm filter is supported by a filter support screen (see Figure 4.2 for PM<sub>10</sub> and Figure 4.3 for PM<sub>2.5</sub>).

## 4.8 Clean and Grease Impactor

Initially, and after every fifth sample, the impactor target should be cleaned. The cleaning frequency can be increased or decreased depending on the ambient loadings and degree of soiling observed on the Easy Maintenance Target (EMT). (See section 6.1.2)

(For Impactor cleaning procedures, see Section 6.1.1, "Impactor Cleaning")

## 4.9 Installing Filters

This procedure should take place in a laboratory or other clean area. Contact with and handling of all filters should be limited to the edges of the filters with forceps. Also, the use of non-serrated, Teflon®-tipped forceps is strongly recommended. Filters should be kept in protective Petrislides™. Filters must never be bent or folded.

1. Select a filter and remove cover from Petrislide™.
2. Using forceps, install the new filter into the filter cassette.
3. Place the filter cassette in the filter holder.
4. Place an identifying tag on the filter holder so that the ID number of the filter mounted in the holder is known.
5. Place the entire clean filter assembly into a plastic bag, or other case, for transporting to the site. It is best to keep the filter assembly in a vertical position until installed on the sampler.

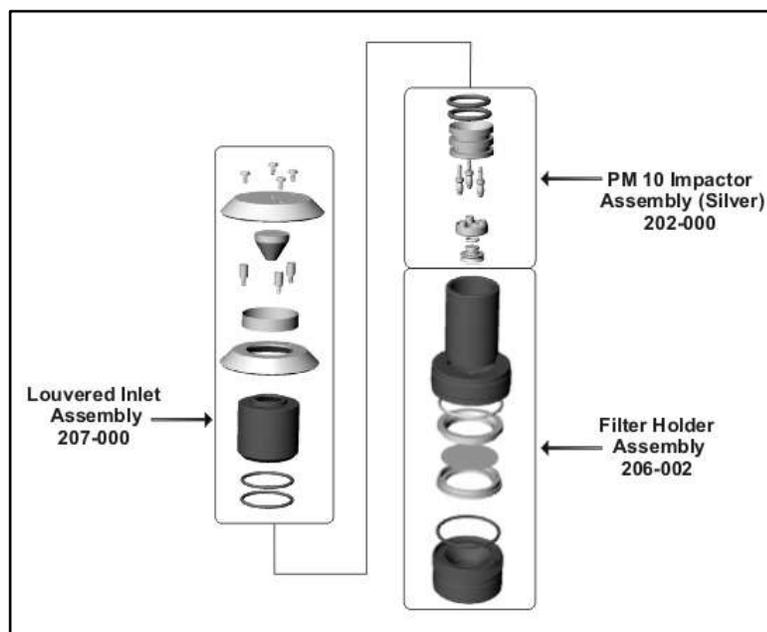


Figure 4.2 - PM10 Impactor/Filter Holder Assembly

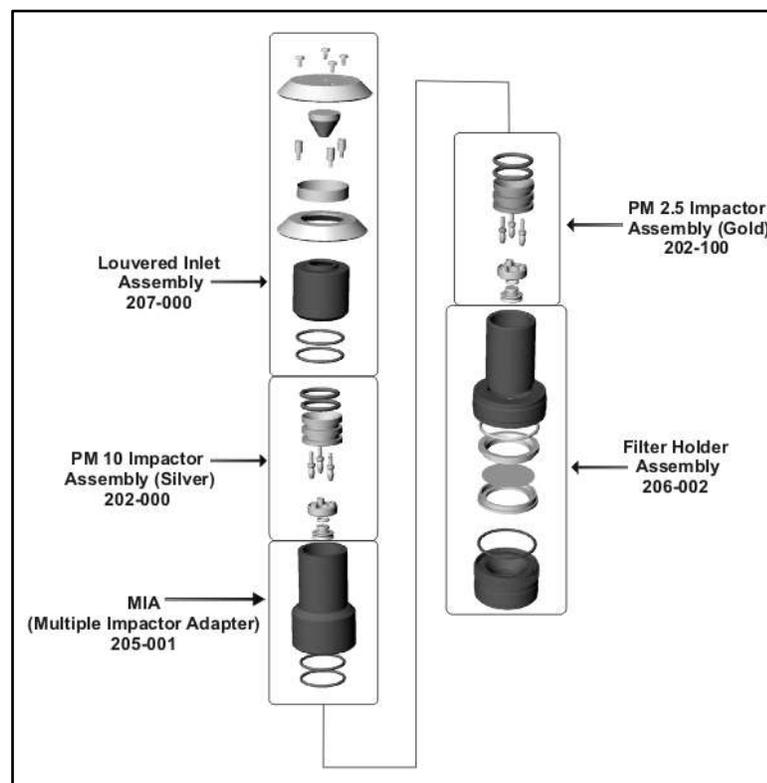


Figure 4.3 - PM2.5 Impactor/Filter Holder Assembly

## 4.10 Cassette Separator

The top and bottom halves of the filter cassette are machined for a press fit. Separating the two halves can be simplified by using a cassette separator\*.

Insert the cassette in the cassette separator and while applying a light downward pressure slide it from left to right as in figure 4.4 below. This motion will separate the top and bottom cassette halves allowing for filter insertion and/or removal.



Figure 4.4 - Cassette Separator

\* the cassette separator is available as Airmetrics part number 600-007

## 4.11 Battery Charging

Recharge the battery pack before each use. If the battery pack is to be stored for more than a month it best to store it at less than full charge and in a cool location. The typical battery pack life is  $\geq 500$  charging cycles.



Airmetrics suggests the batteries not be stored in the sampler. The life of Lithium-Ion batteries can be prolonged by storing the batteries in a cool environment at less than a full charge (about 40%). Storing the battery in the sampler will eventually deplete the battery and will decrease its useful life.

See Section 2.2 “Charging Batteries” in the Getting Started section for instructions in the proper procedure to follow in recharging the batteries.

## 4.12 Changing/Installing Battery Pack

Installing or changing the battery pack is a simple process.

1. Insert the battery pack vertically into the sampler battery slot with the arrow on the battery pack label pointing down and towards the left side of the sampler.
2. To remove the battery pack grip the exposed end of the battery pack and pull. The battery pack should release with very little effort.

## 4.13 Other Battery Checks

A single AA battery located on the back of the circuit board operates the Programmable Timer. The lifetime for this battery is approximately six months when it is left in place on the circuit board. Be sure to observe the correct polarity when inserting a new AA battery into the battery compartment.

#### 4.14 Setting the Desired Sampling Time

Determine the time of the day when the sampler is to turn on and off. Program the timer to turn the sampler on and off at these times (see "Programming the Timer" in Section 2.4).

#### 4.15 Particulate Matter Sampling Procedure

After the sampler has been assembled, adjusted, verified to be in proper working order, and a filter loaded in the Filter Assembly, the sampler is ready to collect air samples. **Note:** For a quick reference to the following steps, see "Particulate Matter Sampling Routine at Site" (Section 9.1).

1. Carefully transport the sampler to the field site. Verify that the sampler, when finally installed will be positioned with the intake upward in an unobstructed area at least 30 cm from any obstacle to airflow.
2. Place the sampler on a firm level surface.
3. Loosen the inlet tube compression nut and extend the inlet tube to the maximum height and re-tighten the nut. Check for leaks using the procedure in Section 2.5.
4. Remove the clean Impactor/Filter Holder Assembly from the plastic transport bag or case. Attach the assembly to the top of the sampler inlet tube.
5. Record the following information on the PM Field Data Sheet: Site ID, number of the filter, the battery ID, sampler ID, ambient temperature and pressure, flowmeter reading, and elapsed time meter reading. (a copy of the data sheet may be downloaded from the Airmetrics website, [www.airmetrics.com](http://www.airmetrics.com)).
6. Open the sampler case and obtain the beginning flow rate, press the ON/AUTO/OFF button to start the pump. On the LCD display, the horizontal bar should move to "ON".
7. If the flowmeter, which should be in the vertical position, indicates zero or a very low reading, check for restrictions.
8. Using the Flow Rate Adjustment control (see Figure 3.1), set the flowmeter within specifications for the project temperature and pressure conditions. Take the reading of the flowmeter from the center of the ball. (See Section 3.5 "Flow Rate Adjustment").
9. Press the ON/AUTO/OFF button twice to stop pump.
10. Press the ON/AUTO/OFF button to set the timer to "Auto" mode. The Sampler **MUST** be in "Auto" mode before the operator leaves if the sampler is to run at a pre-programmed time.
11. Close the sampler case.

#### 4.16 Particulate Matter Sample Retrieval

As soon as possible after the end of the sampling period, the operator should return to the monitoring site to retrieve the exposed filter. Potential for filter damage or changes in sample mass due to particle loss, passive deposition, or volatilization increases if the filter is left in the sampler for extended periods. On the Field Data Sheet record the ambient temperature ( $T_a$ ), barometric pressure ( $P_a$ ), flowmeter reading and elapsed time.

**Note:**  $T_a$  and  $P_a$  readings may be estimated on site or may be obtained from a nearby US National Weather Service Forecast Office or airport weather station. Barometric pressure readings obtained from airports must be at

station pressure (not corrected to sea level), and they may have to be corrected for differences between the elevation of the monitoring site and that of the airport. If  $T_a$  and  $P_a$  readings are not available, seasonal average temperature ( $T_{avg}$ ) and barometric pressure ( $P_{avg}$ ) may be substituted. Care must be taken that the actual conditions at the site can be reasonably represented by such averages. It is therefore recommended that seasonal values represent actual values within 20 °C and 40 mmHg.

1. Open the sampler case check the sampler for any error conditions. If an error condition exists, refer to the “Error Conditions” section at the end of this chapter.
2. Verify correct time and day of week on time LCD.
3. Record elapsed time as shown on the Elapsed Time Totalizer.
4. Obtain ending flow rate:
  - Press the ON/AUTO/OFF button to start the pump.
  - With the flowmeter in a vertical position, record flow rate to the nearest 0.25 lpm (read at center of ball).
  - Press the ON/AUTO/OFF button twice to stop the pump.
5. Exchange a new impactor/filter holder assembly for the exposed filter holder assembly. Perform a cross-check of the exposed filter number with the filter number recorded on the Field Data Sheet for the run just completed. Also, check the filter number against the site number.
6. Change Battery Pack.
7. Obtain beginning flow rate (see above, step 4).
8. Make sure the timer is set for the desired period and in the “AUTO” mode.

## 4.17 Exposed Filter

1. In the laboratory, unscrew the filter holder and remove the filter cassette.
2. Locate the Petrislide™ with the filter number which matches the number on the side of the filter holder assembly. This is the original Petrislide™ in which the filter came.
3. Use the cassette separator (P/N 600-007) to remove the top half of the filter cassette.
4. Using forceps carefully remove the exposed filter from the filter cassette and place it into its original Petrislide™ with the exposed side of the filter facing up, replacing the Petrislide™ lid when finished. (Be sure to replace the filter support screen in the filter cassette assembly).
5. Remove the old ID tag from the filter holder assembly base and discard. (Recheck this number to be sure it matches the number on the Petrislide™.)

## 4.18 Error Conditions

### 4.18.1 Low Battery Indicator ON

Should the Low Battery Indicator be ON at the end of a sampling period, check the Elapsed Time Totalizer to determine the length of time the sampler ran before shutting off. If the time is short (e.g., only 18 hours out of a programmed 24 hour sample), perhaps the battery was not completely charged or is failing to hold a charge. Note the battery number and, after recharging in the lab, observe performance in the next sampling period. If the battery fails again, it is most likely defective and should be replaced.

If a different battery performs in the same manner after shown to be fully charged, the pump motor is perhaps drawing more current than it should. If possible, install a pump from another sampler. If this solves the problem, the previous pump motor is likely defective and should be replaced. If the problem continues, a more serious fault is occurring which should be referred to Airmetrics (see Section 10).

### 4.18.2 Low Flow Indicator ON

Should the Low Flow Indicator be ON at the end of sampling period, first check the Elapsed Time Totalizer to determine the length of time the sampler ran before shutting off. The possible causes for low flow are:

- **Low Battery:** Although power did not fall to the 13.0V lower limit that would shut down the system, the pump may not have been receiving enough voltage to maintain the desired air flow. This will usually only occur if the pump needs to be rebuilt or replaced.
- **Air Restriction:** If the battery is sound, the problem may be due to a restriction in the air inlet, filter holder, or tubing. Check for crimps or other possible restrictions. Also, a broken or loose tubing fitting on the outlet side of the pump could cause a low flow condition. It is also possible for excessive moisture on the filter (rain, condensation) to cause enough flow resistance for the Low Flow Indicator to come on.
- **Pump Malfunction:** The low flow condition could be the result of decreased pump efficiency, which is usually caused by damaged or contaminated pump head components (valves, diaphragms). Check to see if the pump can maintain a free (unrestricted) airflow rate of at least 5 lpm. If not, see Section 6.4 for pump maintenance instructions.

### 4.18.3 Overriding Low Flow/Low Battery Indicators

When Low Flow and Low Battery Indicator LED's are flashing, the system can be restarted by pressing the Reset Button twice. The system will usually run enough to perform a brief field inspection and to obtain final flow rates.

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## 5 HARDWARE DESCRIPTION

### 5.1 Pneumatic System

#### 5.1.1 Filter Holder Assembly

A 47 mm diameter filter cassette and filter holder assembly is used to hold the filter media.

#### 5.1.2 Flowmeter

A standard flowmeter with a range of 1 to 10 lpm is used to indicate sampling flow rate. The flowmeter is calibrated at the factory to an accuracy of  $\pm 2\%$ .

#### 5.1.3 Flow Control System

A monitoring system designed by Airmetrics electronically controls pump speed to maintain a specified flow setting by measuring the drop in air pressure at the outlet of the flowmeter. The Flow Control System is temperature compensated for changes in ambient temperature and pressure.

#### 5.1.4 Miniature D.C. Double Diaphragm Pump

The Airmetrics designed pump has two pumping sections or heads that are connected in parallel for increased flow. The pumping sections consist of synthetic rubber diaphragms and valves driven from the motor shaft by a yoke-crank assembly. All moving parts are completely enclosed. The service life of the motor is in excess of 10,000 hours continuous duty. The diaphragm and valve assemblies are easily replaceable. The service life expectancy of these assemblies is a function of the environmental conditions, including the gases being pumped, delivery rate, and back pressure. Minimum service life for the pumping sections is on the order of 5000 or more hours continuous duty.

### 5.2 Electronics System

#### 5.2.1 Motherboard

Virtually all sampler components connect to the motherboard: the pump, programmable timer, elapsed time totalizer, flowmeter, and flow control components. Flow control and fault circuits, are built into this board.

#### 5.2.2 Power Supply

The sampler is powered by a removable Li-Ion battery pack. The separate charger is designed to charge the battery and then switch to a "maintenance" mode to avoid an overcharge condition. The charger may also be used to directly power the sampler by plugging it into the power jack on the side of the sampler. The battery also has built in protection circuitry that may be activated if the battery output is shorted. The battery can be reset by plugging it into the charger.

### **5.2.3 Programmable Timer**

The Programmable Timer can switch power on and off up to 6 times in one day or over a 7-day period and is capable of individual or multi-day timer settings. It has an easy to read liquid-crystal display and is powered by an on board AA battery.

### **5.2.4 Flow Controller Circuit**

The Flow Controller Circuit is designed to maintain a constant pressure drop across an orifice at the output of the flowmeter. Feedback from the pressure sensor is used to control the pump speed. The system is temperature compensated and is capable of maintaining a constant volumetric flow rate within  $\pm 5\%$  of the set point over the range of 0 to 40°C.

### **5.2.5 Elapsed Time Totalizer**

The Elapsed Time Totalizer is a non-resettable time totalizer which is activated when the programmable time controller is in the "ON" mode. The meter reads hours and tenths of hours.

## 6 MAINTENANCE

Ideally, records reflecting the history of maintenance (including all replacement parts, supplies, costs, expenditures) should be kept for each MiniVol™ TAS.

Check sheets should be used to record preventative and/or corrective maintenance activities and the subsequent sampler calibration curve.

The sampler is comprised of four basic components: impactor/filter holder assembly, flow control system, timer, and battery pack. Following are recommended, routine maintenance procedures for the sampler's basic components.

### 6.1 Impactor/Filter Holder Assembly

#### 6.1.1 Impactor/Filter Holder Cleaning

The maintenance schedule for the cleaning of the impactor/filter holder assembly varies with the quality of the air being sampled and sample runtimes. Under average conditions, and assuming 24 hour sample runtimes, the Easy Maintenance Target (EMT) should be cleaned and greased every fifth sample run and the rest of the impactor/filter holder assembly cleaned with soapy water and rinsed. The cleaning frequency can be increased or decreased depending on the ambient loadings and degree of soiling observed.

1. Separate the sections of the filter holder assembly and remove the louvered inlet.
2. Pushing with the thumb from the bottom, remove the impactor through top of the tube into the palm of your free hand.
3. Remove the EMT from the impactor by pulling on it with your fingers and set aside (see Figure 6.1).
4. Clean the impactor/filter holder assembly using soapy water and rinse thoroughly.
5. Let the impactor/filter holder assembly air dry.
6. Inspect the o-rings on the impactor/filterholder assembly and replace if necessary.
7. Apply a thin coat of low vapor pressure grease\* to the o-rings on the impactor and the o-rings in the filter holder outlet and louvered inlet.



Figure 6.1 - EMT Removal

NOTE: it is **NOT** necessary to grease the o-rings inside the filter holder that seal against the filter cassette. This could contaminate the sample filter.

8. Re-insert the EMT after it has been cleaned and greased, (see next section "EMT Cleaning").

Remove any extraneous, loose, or hair-like shredded material from the exterior of the impactor unit since this material could fall onto the filter below and cause erroneous gravimetric results. Carefully re-insert the impactor into the top of the filter holder assembly tube until the top of the impactor is flush with the top of the tube.

\* low vapor pressure grease is available from Airmetrics as part number 903-004

### 6.1.2 EMT Cleaning

Airmetrics developed the Easy Maintenance Target (EMT) Impactor to simplify the preparation and maintenance of the impactor assembly. The EMT is a removable impactor target that is easily prepared and cleaned. Low vapor pressure grease\* can be applied directly to the target and is easily wiped clean without the need for solvents.

1. Clean the EMT by wiping with a clean lint free cloth or paper towel.
2. Apply a small amount of low vapor pressure grease to the applicator, in this example we are using a small stainless steel ruler; any semi-rigid straight edge will work (see Figure 6.2).
3. Use the straight edge to apply the grease to the EMT in a spreading or “buttering” motion (see Figure 6.3).



Figure 6.2 - Grease

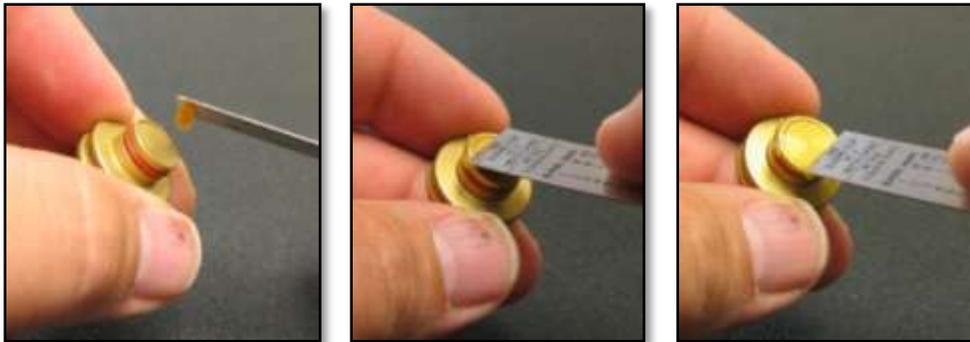


Figure 6.3 - Applying low vapor pressure grease to the EMT

4. After application and excess grease can be wiped from the edges of the EMT.
5. After the EMT has been greased reinsert it into the impactor.

\*low vapor pressure grease is available from Airmetrics as part number 903-004

## 6.2 Flow Control System

Tubing, pulse dampener, inlet filter should be routinely checked for crimps, cracks, or obstructions. Fittings should be inspected periodically for tightness. The flowmeter should be cleaned or replaced if it indicates no flow, low flow, excessive flow, or erratic flow that cannot be traced to a leak. The flowmeter can be easily cleaned using warm water and detergent.

1. Remove the inlet and outlet tubing and detach the flowmeter from the main circuit board.
2. Remove the flowmeter end caps and submerge in detergent solution. Slosh water back and forth using the ball as a self-cleaning agitator. Follow with a rinse in clean water.
3. Air dry and reinstall.

### 6.3 Programmable Timer

A single AA alkaline battery powers the programmable timer. It should last at least 6 months. Since the clock and timer are sealed electronic devices, any failure requires replacement of the entire unit.

### 6.4 Cleaning/Inspecting Pump Valves and Diaphragms

After continued use, the pump valves and diaphragms will become dirty or worn. This condition usually manifests as an irregular flow rate or an inability to accurately adjust the flow rate. The pump may be unable to achieve or sustain a maximum flow rate (above 6 lpm). When these conditions occur, the pump valves must be cleaned or replaced. While the pump diaphragms are not usually affected by dirt, they will become worn and need replacement.

The side of the pump on which the valves are worn or dirty is easily determined by pinching the inlet tubes leading to the pump (first one side and then the other). Under normal conditions, the flow rate will drop by the same amount for both sides as the lines are restricted. If the flow rate drops less for one side, the valves on that side need cleaning or replacing.

When cleaning or replacing valves and diaphragms, replace or clean all valves and diaphragms. (A "Double Diaphragm Pump Rebuild Kit" can be obtained from Airmetrics.)

#### 6.4.1 Cleaning/Inspecting Pump Head Valves

1. Remove a pump head, making note of the orientation of the head and valves. Inspect and replace the valves and diaphragms that are worn or damaged.
2. Clean the diaphragm and valves that are still in good working order with soapy water, rinse and dry. Flip each component and replace in the same order.
3. Screw on the pump head, taking care to match the alignment of the in flow and out flow ports on each pump head. Repeat for opposite side of the pump.

**INTENTIONALLY BLANK**

## 7 TROUBLESHOOTING

Problem	Solution
<p>The flowmeter will not zero when performing a leak check.</p>	<p>Remove the inlet assembly and with the pump running cover the inlet tube with your hand. The flowmeter should drop to zero, if not a leak is present.</p> <p>Verify that the inlet tube compression fitting is tight</p> <p>Remove the four faceplate thumbscrews and the sampler mount thumbscrew to access the pump, pulse dampener and tubing.</p> <p>Check that all push-on hose fittings are secure.</p> <p>Check for cracks in the flowmeter inlet and outlet</p> <p>Check for cracks in the pulse dampener diaphragms.</p> <p>Check that all compression fittings are snug.</p>
<p>The flowmeter will not register a flow rate above 6.5 lpm or the flow rate cannot be adjusted accurately and there is no apparent leak or obstruction</p>	<p>The pump diaphragms and/or valves are dirty or worn (see section 6.4, "Cleaning/Inspecting the Pump Valves and Diaphragms").</p> <p>Check the Pulse Dampener for cracks.</p>
<p>The charger light fails to light red or green when plugged into a battery pack.</p>	<p>The charging LED on top of the charger should light even if the battery is fully charged. If the LED fails to light up the charger is either defective is not receiving line voltage.</p>
<p>The battery charger light does not turn green after charging more than 8 hours.</p>	<p>The battery may be defective. Connect a previously charged battery to the charger if the same condition results then the charger is most likely defective. If the light turns green then the battery is most likely defective.</p>
<p>The battery has no output</p>	<p>The battery has built in protection circuitry that may have been activated if the battery connection is shorted. The battery can be reset by plugging it into the charger.</p>

## 8 SAMPLING CALCULATIONS

### 8.1 Sampler Flow Rate Calculation

The MiniVol™ TAS is designed to operate at 5 lpm at ambient conditions. At the factory the sampler is calibrated to standard conditions, and is adjusted to operate at 5 lpm at these conditions. (See calibration curve shipped with sampler.) In other localities, the sampler must be adjusted to account for the different ambient temperature and barometric pressure. Adjustment within a range previously established by calibration is usually performed before every sampling project. This section explains how to use the calibration information shipped with the MiniVol™ TAS to determine the flow rate that will equal 5 lpm at local ambient conditions.

In the calibration procedure used by Airmetrics, the flowmeter is calibrated against a NIST Traceable Laminar Flow Element (LFE) flow measuring device. Six flow rates, ranging from approximately 4 to 6.5 liters/minute, are typically measured. The inlet of the LFE is open to the atmosphere while the outlet is attached to the inlet of the sampler.

Figure 8.1 shows a typical sampler calibration report. The columns in the report are defined as:

**Q<sub>ind</sub>** Flow rate as indicated by the rotameter on the sampler.

**Q<sub>act</sub>** Flow rate at the actual calibration conditions as determined from the LFE.

**Q@std** The flow rate at standard conditions for the indicated LFE pressure drop. (Note that this is not the same as converting the actual flow rate to standard conditions.) Standard conditions are defined as an atmospheric pressure (**P<sub>std</sub>**) of 760 millimeters of mercury and a temperature (**T<sub>std</sub>**) of 298°K.

**Q<sub>calc</sub>** The calculated flow rate of the sampler that is determined from the linear regression results.

**Diff** The percentage difference in flow rates between the measured and the calculated flow rates.

For each point in the calibration procedure, the flow rate indicated by the flowmeter, "**Q<sub>ind</sub>**", is recorded, and the actual flow rate, "**Q<sub>act</sub>**" and "**Q@std**" are calculated from the pressure drop across the LFE.

The **Linear Regression Results** in Figure 8.1 shows the results of the best fit line of Q<sub>ind</sub> (independent) to Q@std (dependent) variables:

#### Equation 1 – MiniVol™ Calibration Factor

$$Q_{@std} = m_{vol} \times Q_{ind} + b_{vol}$$

Where  $m_{vol}$  = slope of the least square line  
 $b_{vol}$  = intercept of the least square line

The coefficient of determination ( $r^2$ ) is also listed in Figure 8.1.

### MiniVol Portable Sampler NIST Traceable Flow Calibration Unit: 4623

Calibration Date: 07/31/2007  
Ambient Temp, °C: 22.6  
Atmos Press, mmHg: 754.0

Primary Flow Std: LFE774300

By: \_\_\_\_\_

Chk: \_\_\_\_\_

Q <sub>ind</sub> (lpm)	Q <sub>act</sub> (alpm)	Q <sub>@std</sub> (slpm)	Q <sub>calc</sub> (slpm)	Diff (%)
6.50	6.794	6.795	6.794	0.01
6.00	6.284	6.285	6.280	0.08
5.40	5.665	5.666	5.663	0.05
5.00	5.234	5.235	5.252	-0.34
4.40	4.640	4.640	4.636	0.10
3.90	4.125	4.126	4.122	0.10

#### Linear Regression Results:

$$\begin{aligned} m_{vol} &= 1.0277 \\ b_{vol} &= 0.1137 \\ r^2 &= 0.9999 \end{aligned}$$

The MiniVol Calibration is performed with an NIST-traceable standard. Each unit has a unique pair of calibration constants derived from the calibration which are used to calculate the Sampler's actual flow rate at all ambient conditions. The Sampler's calibration should be recertified annually.

For an indicated rotameter flow rate (Q<sub>ind</sub>), the flow rate at actual sampling conditions (Q<sub>act</sub>) is given by the following equation (Eq.1):

$$Q_{act} = (m_{vol} Q_{ind} + b_{vol}) \times \sqrt{\frac{P_{std}}{P_{act}} \times \frac{T_{act}}{T_{std}}} \quad \text{Eq.1}$$

The Sampler is designed to operate at 5.0 lpm at actual conditions. The rotameter setting for this nominal flow rate (I<sub>sp</sub>) can be calculated by using the following equation (Eq.2):

$$I_{sp} = \frac{5.0 \times \sqrt{\frac{P_{act}}{P_{std}} \times \frac{T_{std}}{T_{act}}} - b_{vol}}{m_{vol}} \quad \text{Eq.2}$$

Where:

- I<sub>sp</sub> = Calculated Rotameter Setpoint, liters/min.
- P<sub>std</sub> = Standard Atmospheric Pressure (760 mm Hg)
- T<sub>std</sub> = Standard Temperature (298 °K)
- P<sub>act</sub> = Actual Ambient Pressure, mm Hg
- T<sub>act</sub> = Actual Ambient Temperature, °K
- Q<sub>act</sub> = Actual Flow Rate, liters/min.
- Q<sub>ind</sub> = Rotameter Indicated Flow Rate, liters/min.

#### Airmetrics

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Figure 8.1 - Sampler Calibration Report

## 8.2 Sampling at Ambient Conditions

The sampler's size-selective inlet is an impactor whose particle size selection characteristic is dependent upon the velocity with which the air stream impacts upon the impaction plate also known as the target (see Section 8.4). The impactor is designed to have a nominal 10µm (part 206-000) or 2.5µm (part 206-100) cutpoint at an actual air flow rate of 5.0 liters per minute. To maintain this cut off size, the sampler's flow rate must be adjusted (flowmeter set point -  $I_{sp}$ ) so that the flow rate through the size-selective inlet is maintained at 5.0 lpm at **ambient** conditions.

To calculate the flowmeter set point, you need:

- The sampler's calibration slope,  $m_{vol}$ , and intercept,  $b_{vol}$ . This information is supplied to you on the "MiniVol™ Portable Sampler NIST Traceable Flow Calibration" that came with your sampler (Figure A.1);
- The expected ambient temperature,  $T_{act}$ , in K°, and pressure,  $P_{act}$ , in mmHg, expected during the sampling event. This data may be estimated from local weather service data or from other reported historical data. If the U.S Weather Service atmospheric pressure is used, be sure that the "station pressure" is used. That is, atmospheric pressure **not** corrected for the reporting site's elevation above sea level.

If the local "station pressure",  $P_{act}$  is not readily available, it can be reasonably estimated by using Equation 2.

Equation 2 – Pressure Correction

$$P_{act} = P_{sea} \times \left( 1 - \frac{E}{145330} \right)^{5.25}$$

Where  $P_{act}$  = ambient atmospheric pressure  
 $P_{sea}$  = sea level atmospheric pressure (nominally 760 mmHg)  
 $E$  = site elevation in feet

The Flowmeter Set Point,  $I_{sp}$ , is calculated using Equation 3.

Equation 3 – Flowmeter Setpoint

$$I_{sp} = \frac{5.0 \times \left( \sqrt{\frac{P_{act}}{P_{std}} \times \frac{T_{std}}{T_{act}}} \right) - b_{vol}}{m_{vol}}$$

Where  $I_{sp}$  = flowmeter set point, liters/minute  
 $P_{std}$  = standard atmospheric pressure, 760 mmHg  
 $T_{std}$  = standard temperature, 298 K°  
 $P_{act}$  = actual ambient pressure, mmHg  
 $T_{act}$  = actual ambient temperature, K°

### 8.3 PM Concentration Calculation

To calculate the PM concentration for a sample taken with the MiniVol™ TAS, the volume of air that passed through the filter at standard conditions,  $V_{std}$ , or at ambient conditions,  $V_{amb}$ , must be calculated. This is most easily done in a multi-step procedure.

Calculate the air flow rate at ambient conditions,  $Q_{act}$ , using Equation 4.

Equation 4 – Flow Rate @ Ambient

$$Q_{act} = (m_{vol} \times Q_{ind} + b_{vol}) \times \sqrt{\frac{P_{std}}{P_{act}} \times \frac{T_{act}}{T_{std}}}$$

Calculate the volume of air that passed through the filter during the sampling period at actual ambient conditions,  $V_{act}$  (in cubic meters).

Equation 5 – Volume @ Ambient

$$V_{act} = \frac{60_{min/hr} \times Q_{act} \times t_{hr}}{1000_{l/m^3}}$$

Where  $t_{hr}$  = sampling period, in hours

In the equation above, time is expressed in hours since the MiniVol™ TAS elapsed time meter records time in hours. The units of  $V_{act}$  are *cubic meters*.

In the actual use of the portable samplers, the *temperatures, pressures and flowmeter readings* are only noted at the start (when the sampler is set up for a run) and end (when sampler is retrieved) of the sampling period. Therefore, calculate  $Q_{act}$  for the starting and ending conditions and use the average  $Q_{act}$  to determine  $V_{act}$ .

To calculate the concentration at standard conditions, correct the volume of the air at actual ambient conditions,  $V_{act}$ , to the volume of air at standard conditions,  $V_{std}$ .

Equation 6 – Volume Correction to Std

$$V_{std} = V_{act} \times \left(\frac{P_{act}}{P_{std}}\right) \times \left(\frac{T_{std}}{T_{act}}\right)$$

To finally calculate the concentration of PM, divide the net mass gain of the filter by the volume of air that passed through the filter. Use equation 7 for mass at actual conditions and Equation 8 for mass at standard conditions.

**Equation 7 – PM Concentration @ Act**

$$PM_{act} = \frac{M_{PM}}{V_{act}}$$

OR

**Equation 8 – PM Concentration @ Std**

$$PM_{std} = \frac{M_{PM}}{V_{std}}$$

Where  $PM_{act}$  = PM concentration, in micrograms ( $\mu\text{g}$ ) per cubic meter (actual)  
 $PM_{std}$  = PM concentration, in micrograms ( $\mu\text{g}$ ) per cubic meter (standard)  
 $M_{PM}$  = Mass of particulate matter collected on the filter, in micrograms ( $\mu\text{g}$ )

## 8.4 Impactor Cutpoint

The impactor is designed to provide a specific particle cutpoint at a set flow rate. The Airmetrics impactors are designed for a nominal flow rate of 5 lpm. If the user samples at a flow rate other than 5 lpm the actual impactor cutpoint,  $C_{act}$ , can be calculated using Equation 9.

**Equation 9 – Impactor Cutpoint**

$$C_{act} = \sqrt{\frac{Q_{design}}{Q_{act}}} \times C_{design}$$

Where  $C_{act}$  = Actual cutpoint at set flow  
 $C_{design}$  = Cutpoint at designed flow rate (e.g.  $10_{\mu}$  or  $2.5_{\mu}$ )  
 $Q_{design}$  = Design flow rate (5 lpm)  
 $Q_{act}$  = Actual sampler flow rate

## 9 QUICK REFERENCE

### 9.1 Particulate Matter Sampling Routine at Site

1. Open sampler case
2. Record the hours shown on the elapsed time totalizer.
3. Check for any error conditions that exist. If either the “Low Flow” or “Low Battery” error indicators are lit record the error and press the reset button.
4. Press the On/Auto/Off button to start the sampler pump.
5. With the sampler running (in a vertical position) and the flow stable read the flowmeter (to the nearest 0.25 lpm at the center of the ball) and record the ending flow rate.
6. Press the On/Auto/Off button to stop the sampler pump
7. Before removing the impactor/filter holder assembly from the sampler. Cross check the filter sticker number on the assembly with the filter number on the field data worksheet. If the numbers are different make a note and record the actual filter number on the worksheet.
8. Remove the impactor/filter holder assembly from the inlet tube and place it in a clean plastic bag or case for transport.
9. Change the battery pack (Do not inadvertently reuse the spent battery pack). If either the “Low Flow” or “Low Battery” indicators were lit, make a note and record the battery pack number since it may be defective.
10. Check the sampler for leaks by pressing the On/Auto/Off button to start the sampler pump and covering the inlet tube with the palm of your hand. The ball should drop to zero *Note: the pump may stall momentarily until the flow control circuit compensates*. If the sampler will not pass a leak check go to section 2.5 “Checking for Leaks.” Make sure the sampler is leak free before moving on.
11. Attach a new impactor/filter holder assembly containing a new filter.
12. Press the On/Auto/Off button to start the sampler pump.
13. With the sampler running (in a vertical position) adjust the flow rate to the correct set point. Press the On/Auto/Off button to stop the sampler pump.
14. On a new “Field Data Log” worksheet record the site ID, sampler #, filter #, beginning flow rate, elapsed time totalizer reading and any other pertinent data.
15. Program the programmable timer (see section 2.4 “Programmable Timer” if needed).
16. Place the sampler in the “Auto” mode.
17. Close the sampler case.

## 10 WARRANTY POLICY

### 10.1 What is Covered

The MiniVol™ TAS is warranted by Airmetrics against defects in materials and workmanship for a period of one year from the date of original purchase with the exception of the rechargeable lithium-ion batteries which are warranted for a period of six months from the date of purchase. During the warranty period, we will repair or, at our option, replace at no charge a sampler or battery that proves to be defective, provided you return the sampler or battery, shipping prepaid, to Airmetrics. (Replacement may be with a newer model of equivalent or better functionality.)

This warranty gives you specific legal rights, and you may also have other rights that vary from state to state, province to province, or country to country.

### 10.2 What is Not Covered

AA batteries, and damages caused by AA batteries, are not covered by the Airmetrics warranty.

This warranty does not apply if the product has been damaged by accident or misuse or as the result of service or modification by other than an Airmetrics technician.

No other express warranty is given. The repair or replacement of a product is your exclusive remedy. Any other implied warranty of merchantability or fitness is limited to the one-year duration of this written warranty.

Some states, provinces, or countries do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. In no event shall Airmetrics be liable for consequential damages. Some states, provinces, or countries do not allow the exclusion of limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

### 10.3 Warranty Service

In the event that a MiniVol™ TAS component is missing, damaged, or defective, follow these steps to obtain a replacement part:

- Call or email Airmetrics tech support and explain the problem.
- Obtain authorization to return the defective or damaged components.
- Package the item(s) carefully to prevent further damage.
- Identify the item(s) being returned on a clearly marked packing list with your name, company name, address, and phone number.

Ship to:

Airmetrics  
2095 Garden Ave.  
Suite 102  
Eugene, OR 97403  
U.S.A.  
(541) 683-5420  
[sales@airmetrics.com](mailto:sales@airmetrics.com)

Items will be repaired or replaced at Airmetrics discretion and returned as soon as possible.

## 11 PARTS LIST

The following figures and tables identify some of the components and parts of the MiniVol™ TAS.

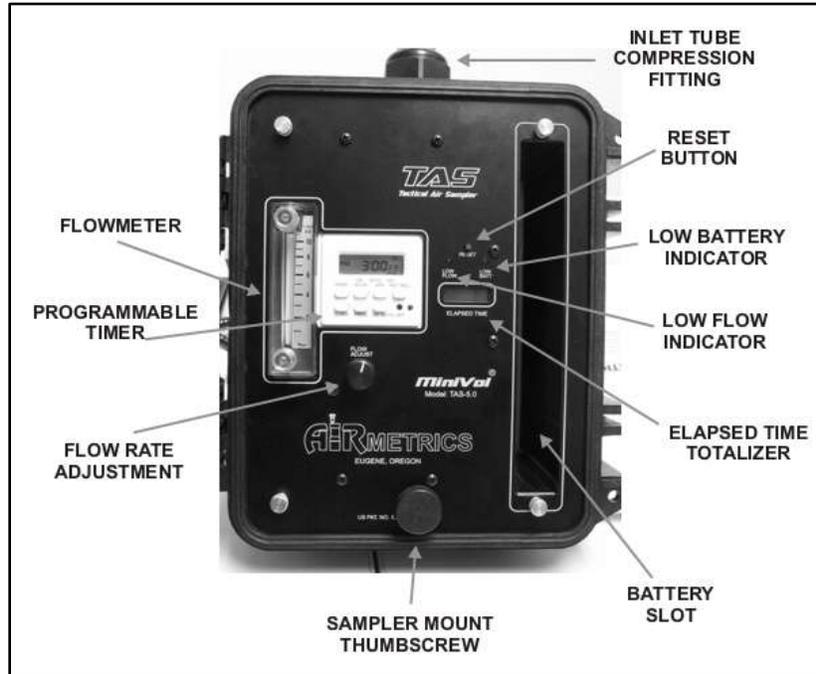


Figure 11.1 - Exterior Sampler

PART DESCRIPTION	PART NUMBER
Flowmeter	101-003
Programmable Timer	101-002
Elapsed Time Totalizer	101-001
Inlet Tube Compression Fitting	700-006
Sampler Mount Thumbscrew	700-011

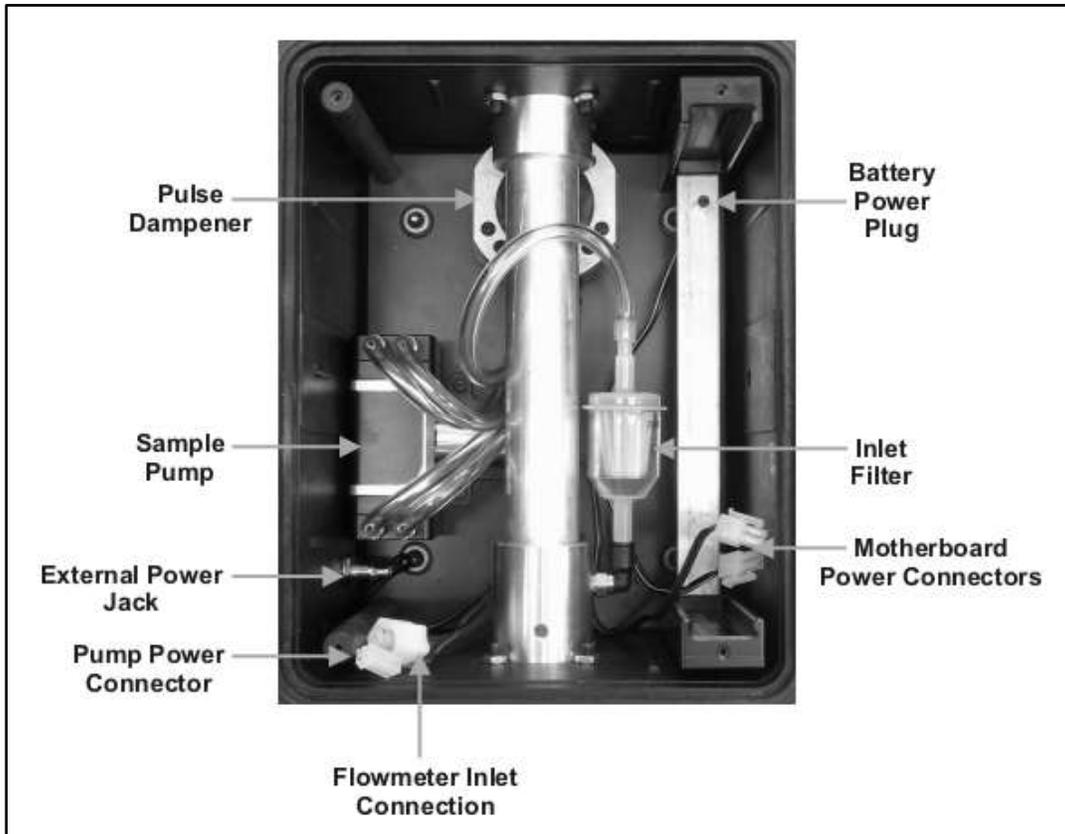


Figure 11.2 - Interior Sampler

PART DESCRIPTION	PART NUMBER
Pulse Dampener	101-011
Pulse Dampener Diaphragm	101-011-01
Sample Pump	100-003
Sample Pump Diaphragm	108-004
Sample Pump Valves	108-005
Inlet Filter	101-012-03

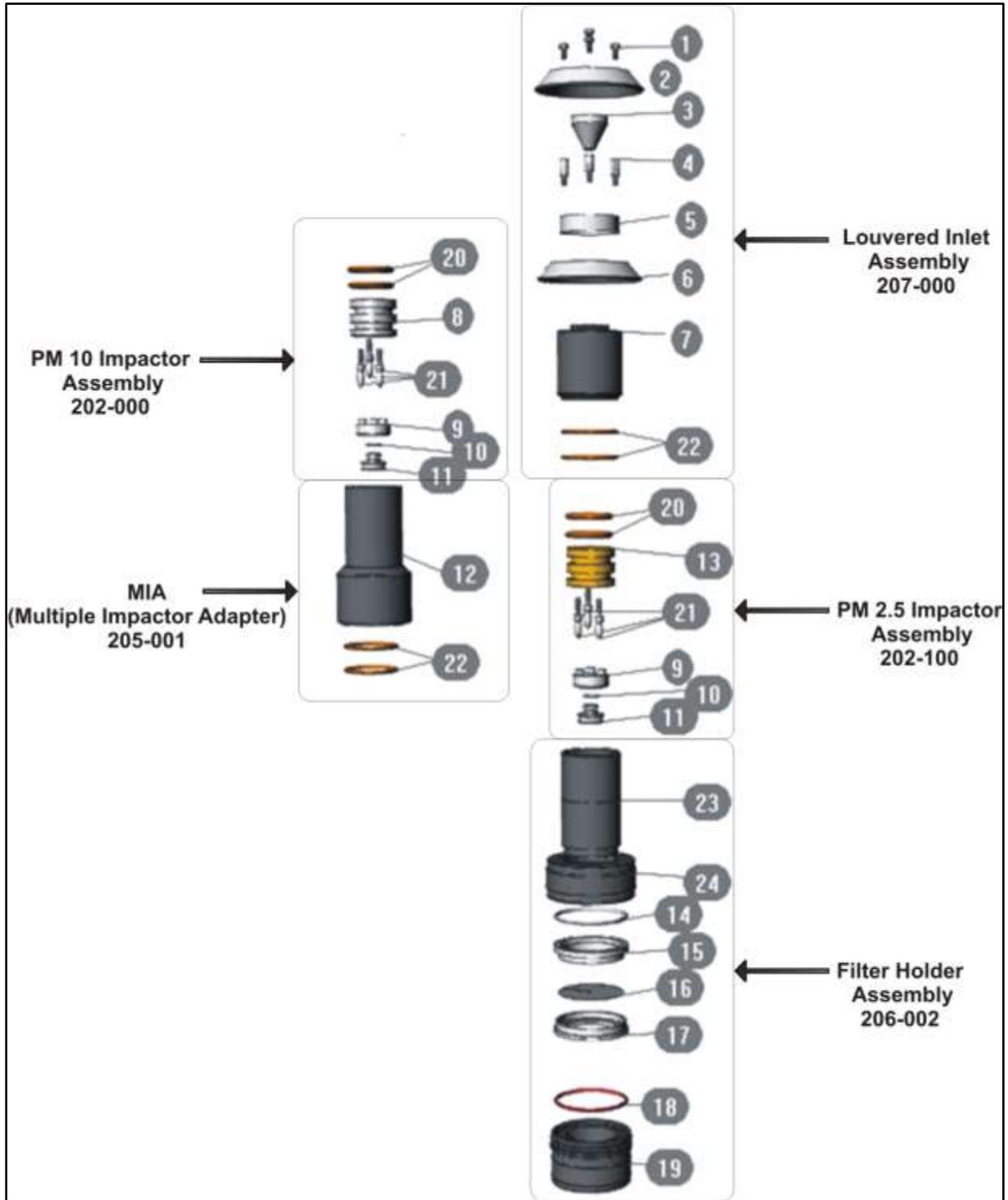


Figure 11.3 - Impactor/Filter Holder Assembly

KEY	PART DESCRIPTION	PART NUMBER
1	Machine Screw	301-005
2	Shield - Upper	207-003
3	Deflector Cone	207-005
4	Standoff	207-007
5	Bug Screen	207-004
6	Shield - Lower	207-002
7	Inlet Body	207-001
8	PM-10 Jet	202-001
9	EMT Socket	208-001
10	O-ring	208-002
11	EMT Impactor Plug	208-003
12	MIA body	205-001-01
13	Pm-2.5 Jet	202-101
14	O-ring, Teflon	206-002-04
15	Filter Cassette Top	206-001-01
16	Filter Support Screen	206-001-03
17	Filter Cassette Bottom	206-002-02
18	O-ring, viton	206-002-03
19	Filter Holder Bottom	206-001-02
20	O-ring	202-003
21	Spring Clip Standoff	202-004
22	O-Ring	205-002
23	Impactor Adaptor	206-004
24	Filter Holder Top	206-002-01

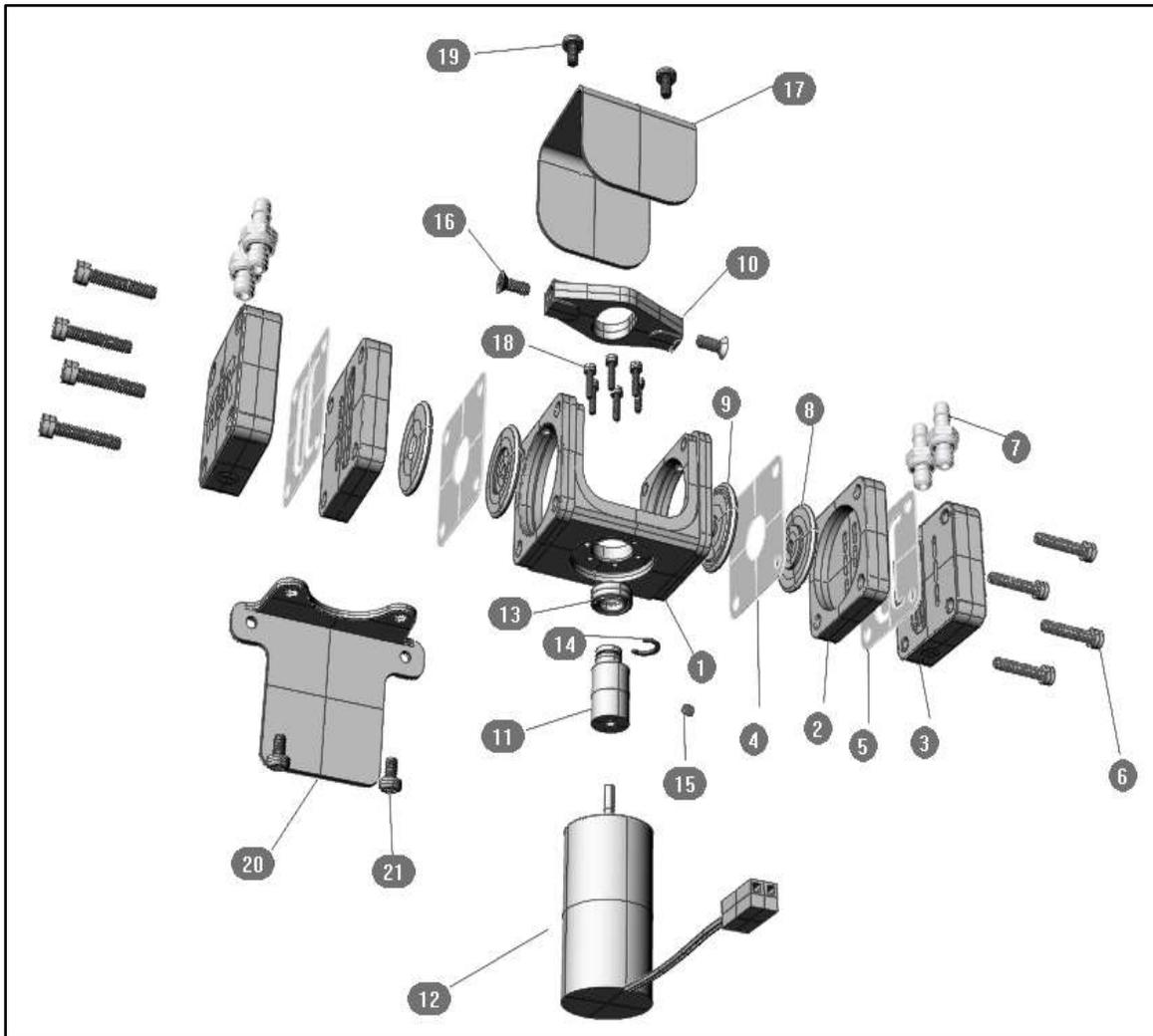


Figure 11.4 - Pump

KEY	DESCRIPTION	PART NUMBER	REQD
	Pump Assembly, 12V,complete	108-000	
1	Frame	108-001	1
2	Head-Lower	108-002	2
3	Head-Upper	108-003	2
4	Diaphragm	108-004	2
5	Valves	108-005	2
6	Socket Cap Screw	901-004	8
7	Hose Barb	108-007	4
8	Piston-Upper	108-008	2
9	Piston-Lower	108-009	2
10	Yoke	108-010	1
11	Cam	108-011	1
12	Motor	108-012	1
13	Bearing	108-013	1
14	Retainer	108-014	1
15	Socket Set Screw	108-015	1
16	Flat Head Screw	106-010	2
17	Cover	108-017	1
18	Socket Cap Screw	108-018	6
19	Pan Head Screw	301-005	2
20	Mounting Bracket	108-020	1
21	Pan Head Screw	301-005	2

## PM Sampling - Field Data Log

Project: \_\_\_\_\_

Sampling Date: \_\_\_\_\_ Page \_\_\_\_\_ of \_\_\_\_\_

Start - AtmPres[mmHg]: \_\_\_\_\_ End - AtmPres[mmHg]: \_\_\_\_\_

Start - AmbTemp[°C]: \_\_\_\_\_ End - AmbTemp[°C]: \_\_\_\_\_

<b>For Data Entry Use:</b>	
Project ID	_____
Filter ID	_____
Logged	_____
File Name	_____
Verified	_____

Site ID	Sampler Serial #	Filter No.	Start		End		Your Notes
			RotoFlow	ElapTime	RotoFlow	ElapTime	
	Filter Cmt: _____						
	Site Cmt: _____						
	Filter Cmt: _____						
	Site Cmt: _____						
	Filter Cmt: _____						
	Site Cmt: _____						
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Suite 102  
Eugene, OR 97403

Phone: 541.683.5420  
Fax: 541.683.1047

Website: [www.airmetrics.com](http://www.airmetrics.com)  
Email: [sales@airmetrics.com](mailto:sales@airmetrics.com)

## **Attachment 3 – Data Record Forms**

# Air Sampling Data Sheet

Date Collected	GBU/Project Name/Location		Project No.			
Day      Mo      Year						
Pump No.						
Sample No.						
Employee Name or Sample Location						
Time On/Off	/	/	/			
Total Sample Time						
Flow Rate						
Total Volume						
Material Being Used	A	A	A			
	B	B	B			
	C	C	C			
Describe Operation (what is being done)						
Observations						
Air Flow	<input type="checkbox"/> Still <input type="checkbox"/> Crossflow	<input type="checkbox"/> Still <input type="checkbox"/> Crossflow	<input type="checkbox"/> Still <input type="checkbox"/> Crossflow			
	<input type="checkbox"/> Laminar <input type="checkbox"/> Disturbed	<input type="checkbox"/> Laminar <input type="checkbox"/> Disturbed	<input type="checkbox"/> Laminar <input type="checkbox"/> Disturbed			
Conditions Causing Air Flow	<input type="checkbox"/> Toward Sample	<input type="checkbox"/> Toward Sample	<input type="checkbox"/> Toward Sample			
	<input type="checkbox"/> Away from Sample	<input type="checkbox"/> Away from Sample	<input type="checkbox"/> Away from Sample			
Distance from Source to Sample	Horizontal	Vertical	Horizontal	Vertical	Horizontal      Vertical	
Sample for						
Sampling Instrument						
Collection Medium	Type		Type		Type	
	Lot No.		Lot No.		Lot No.	
Ambient Conditions	Temp	B. Press	RH			
	°F		%	Temp	B. Press	RH
Results/PEL/TLV	/	/				
	/	/	/	/	/	/

C:\USERS\49540\DOCUMENTS\TEMP\GEORGIA5 STUFF\CSHM 09-02 AIR SAMPLING



# Perimeter Air Monitoring

Date: \_\_\_\_\_ Calibration Date: \_\_\_\_\_ Zeroed: \_\_\_\_\_

Instrument: \_\_\_\_\_ Model: \_\_\_\_\_

Sampler: \_\_\_\_\_ Signature: \_\_\_\_\_

Time:	Upwind		Downwind 1		Downwind 2	
	Location	Reading	Location	Reading	Location	Reading
Comments:						
Comments:						
Comments:						
Comments:						
Comments:						
Comments:						

C:\USERS\49540\APPDATA\LOCAL\MICROSOFT\WINDOWS\TEMPORARY INTERNET





**APPENDIX E  
PHOTOGRAPHIC LOG**



# PHOTOGRAPHIC LOG

---

**Project Name:** DuPont IRM Excavation Project  
**Location:** East Chicago, IN      **Notes:** Area A pre-excitation  
**Date:** 9/10/2012      SE corner looking NW  
**Taken By:** Clinton Betchan



---

**Project Name:** DuPont IRM Excavation Project  
**Location:** East Chicago, IN      **Notes:** Area A SW corner  
**Date:** 9/20/2012      looking NE after excavation  
**Taken By:** Clinton Betchan



# PHOTOGRAPHIC LOG

---

**Project Name:** DuPont IRM Excavation Project  
**Location:** East Chicago, IN      **Notes:** Area C pre-excitation  
**Date:** 9/5/2012      NE corner looking SW  
**Taken By:** Clinton Betchan



---

**Project Name:** DuPont IRM Excavation Project  
**Location:** East Chicago, IN      **Notes:** Area C debris and rubble  
**Date:** 9/25/2012      found during excavation  
**Taken By:** Clinton Betchan



# PHOTOGRAPHIC LOG

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**Project Name:** DuPont IRM Excavation Project  
**Location:** East Chicago, IN      **Notes:** Area C drum found during excavation  
**Date:** 10/2/2012  
**Taken By:** Clinton Betchan



---

**Project Name:** DuPont IRM Excavation Project  
**Location:** East Chicago, IN      **Notes:** Area C looking west after final excavation and backfill  
**Date:** 11/21/2012  
**Taken By:** Clinton Betchan



# PHOTOGRAPHIC LOG

---

**Project Name:** DuPont IRM Excavation Project  
**Location:** East Chicago, IN      **Notes:** Area D pre-excitation  
**Date:** 9/5/2012      NE corner looking SW  
**Taken By:** Clinton Betchan



---

**Project Name:** DuPont IRM Excavation Project  
**Location:** East Chicago, IN      **Notes:** Area D cylinders found  
**Date:** 9/20/2012      during excavation  
**Taken By:** Clinton Betchan



# PHOTOGRAPHIC LOG

---

**Project Name:** DuPont IRM Excavation Project

**Location:** East Chicago, IN

**Date:** 10/8/2012

**Taken By:** Clinton Betchan

**Notes:** Area D debris and rubble found during excavation



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**Project Name:** DuPont IRM Excavation Project

**Location:** East Chicago, IN

**Date:** 10/17/2012

**Taken By:** Clinton Betchan

**Notes:** Area D debris area being surveyed after excavation



# PHOTOGRAPHIC LOG

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**Project Name:** DuPont IRM Excavation Project  
**Location:** East Chicago, IN  
**Date:** 11/21/2012  
**Taken By:** Clinton Betchan

**Notes:** Area D looking west after final backfill placement



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**Project Name:** DuPont IRM Excavation Project  
**Location:** East Chicago, IN  
**Date:** 11/21/2012  
**Taken By:** Clinton Betchan

**Notes:** Area D looking east after final backfill placement



# PHOTOGRAPHIC LOG

---

**Project Name:** DuPont IRM Excavation Project  
**Location:** East Chicago, IN  
**Date:** 9/5/2012  
**Taken By:** Clinton Betchan

**Notes:** Area E pre-excavation  
NW corner looking SE



---

**Project Name:** DuPont IRM Excavation Project  
**Location:** East Chicago, IN  
**Date:** 12/6/2012  
**Taken By:** Clinton Betchan

**Notes:** Area E looking east  
after final excavation



**Project Name:** DuPont IRM Excavation Project

**Location:** East Chicago, IN

**Date:** 9/5/2012

**Taken By:** Clinton Betchan

**Notes:**

Area F pre-excavation  
SW corner looking NE



---

**Project Name:** DuPont IRM Excavation Project

**Location:** East Chicago, IN

**Date:** 12/13/2012

**Taken By:** Clinton Betchan

**Notes:**

Area F excavation  
West side looking NE



**Project Name:** DuPont IRM Excavation Project

**Location:** East Chicago, IN

**Date:** 12/18/2012

**Taken By:** Clinton Betchan

**Notes:**

Area F south end looking east after final excavation



---

**Project Name:** DuPont IRM Excavation Project

**Location:** East Chicago, IN

**Date:** 12/18/2012

**Taken By:** Clinton Betchan

**Notes:**

Area F looking north along debris trench after final excavation



**Project Name:** DuPont IRM Excavation Project

**Location:** East Chicago, IN

**Date:** 9/5/2012

**Taken By:** Clinton Betchan

**Notes:**

Area G pre-excavation  
north side looking south



---

**Project Name:** DuPont IRM Excavation Project

**Location:** East Chicago, IN

**Date:** 12/18/2012

**Taken By:** Clinton Betchan

**Notes:**

Area G looking south from  
north end after final excavation



**Project Name:** DuPont IRM Excavation Project

**Location:** East Chicago, IN

**Date:** 10/3/2012

**Taken By:** Clinton Betchan

**Notes:**

Area G' pre-excitation  
looking north



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**Project Name:** DuPont IRM Excavation Project

**Location:** East Chicago, IN

**Date:** 12/18/2012

**Taken By:** Clinton Betchan

**Notes:**

Area G' after final excavation  
looking SE from NW corner



**Project Name:** DuPont IRM Excavation Project

**Location:** East Chicago, IN

**Date:** 11/21/2012

**Taken By:** Clinton Betchan

**Notes:**

Area H pre-excavation  
north end looking south



**Project Name:** DuPont IRM Excavation Project

**Location:** East Chicago, IN

**Date:** 12/18/2012

**Taken By:** Clinton Betchan

**Notes:**

Area H final excavation  
north end looking south



# PHOTOGRAPHIC LOG

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**Project Name:** DuPont IRM Excavation Project  
**Location:** East Chicago, IN  
**Date:** 10/29/2012  
**Taken By:** Clinton Betchan

**Notes:** Area I pre-excavation  
NW corner looking SE



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**Project Name:** DuPont IRM Excavation Project  
**Location:** East Chicago, IN  
**Date:** 11/30/2012  
**Taken By:** Clinton Betchan

**Notes:** Area I looking SE  
after final excavation



**APPENDIX F  
LABORATORY ANALYTICAL REPORTS  
SOIL SAMPLING**



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-50268-1  
Client Project/Site: CMS Soil Sampling 4/12

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
9/21/2012 3:56:28 PM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50268-1

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**Job ID: 500-50268-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-50268-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 9/18/2012 3:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.2° C.

**Metals**

No analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50268-1

**Client Sample ID: ECH-S-SP-1 (0.5-1)**

**Lab Sample ID: 500-50268-1**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	330		30	6.3	mg/Kg	1	☼	6010B	Total/NA
Antimony	1.6	J	3.0	0.40	mg/Kg	1	☼	6010B	Total/NA
Arsenic	4.7		1.5	0.33	mg/Kg	1	☼	6010B	Total/NA
Barium	150		1.5	0.18	mg/Kg	1	☼	6010B	Total/NA
Beryllium	0.11	J	0.60	0.044	mg/Kg	1	☼	6010B	Total/NA
Cadmium	2.6		0.30	0.075	mg/Kg	1	☼	6010B	Total/NA
Calcium	140000		30	5.3	mg/Kg	1	☼	6010B	Total/NA
Chromium	2.3		1.5	0.25	mg/Kg	1	☼	6010B	Total/NA
Cobalt	0.12	J	0.75	0.079	mg/Kg	1	☼	6010B	Total/NA
Copper	9.6		1.5	0.41	mg/Kg	1	☼	6010B	Total/NA
Iron	710		30	13	mg/Kg	1	☼	6010B	Total/NA
Lead	170		0.75	0.26	mg/Kg	1	☼	6010B	Total/NA
Magnesium	39		15	2.9	mg/Kg	1	☼	6010B	Total/NA
Manganese	6.7		1.5	0.21	mg/Kg	1	☼	6010B	Total/NA
Nickel	0.77	J	1.5	0.33	mg/Kg	1	☼	6010B	Total/NA
Potassium	69	J	75	8.5	mg/Kg	1	☼	6010B	Total/NA
Silver	0.39	J	0.75	0.091	mg/Kg	1	☼	6010B	Total/NA
Sodium	230	B	150	28	mg/Kg	1	☼	6010B	Total/NA
Vanadium	1.1		0.75	0.11	mg/Kg	1	☼	6010B	Total/NA
Zinc	380		3.0	1.0	mg/Kg	1	☼	6010B	Total/NA
Arsenic	0.015	J	0.050	0.010	mg/L	1		6010B	TCLP
Barium	0.037	J	0.50	0.010	mg/L	1		6010B	TCLP
Cadmium	0.042		0.0050	0.0020	mg/L	1		6010B	TCLP
Lead	0.43		0.050	0.0050	mg/L	1		6010B	TCLP
Mercury	0.00013	J B	0.00020	0.000020	mg/L	1		7470A	TCLP
Mercury	0.86		0.053	0.020	mg/Kg	2	☼	7471A	Total/NA

**Client Sample ID: ECH-S-SP-2 (0.5-1)**

**Lab Sample ID: 500-50268-2**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	400		27	5.7	mg/Kg	1	☼	6010B	Total/NA
Arsenic	0.97	J	1.4	0.30	mg/Kg	1	☼	6010B	Total/NA
Barium	28		1.4	0.16	mg/Kg	1	☼	6010B	Total/NA
Beryllium	0.19	J	0.55	0.040	mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.78		0.27	0.068	mg/Kg	1	☼	6010B	Total/NA
Calcium	130000		27	4.8	mg/Kg	1	☼	6010B	Total/NA
Chromium	1.9		1.4	0.23	mg/Kg	1	☼	6010B	Total/NA
Cobalt	0.078	J	0.68	0.072	mg/Kg	1	☼	6010B	Total/NA
Copper	1.1	J	1.4	0.37	mg/Kg	1	☼	6010B	Total/NA
Iron	560		27	12	mg/Kg	1	☼	6010B	Total/NA
Lead	33		0.68	0.24	mg/Kg	1	☼	6010B	Total/NA
Magnesium	17		14	2.7	mg/Kg	1	☼	6010B	Total/NA
Manganese	12		1.4	0.19	mg/Kg	1	☼	6010B	Total/NA
Potassium	52	J	68	7.7	mg/Kg	1	☼	6010B	Total/NA
Silver	0.14	J	0.68	0.082	mg/Kg	1	☼	6010B	Total/NA
Sodium	130	J B	140	25	mg/Kg	1	☼	6010B	Total/NA
Vanadium	0.72		0.68	0.10	mg/Kg	1	☼	6010B	Total/NA
Zinc	19		2.7	0.94	mg/Kg	1	☼	6010B	Total/NA
Barium	0.043	J	0.50	0.010	mg/L	1		6010B	TCLP
Cadmium	0.0029	J	0.0050	0.0020	mg/L	1		6010B	TCLP
Lead	0.027	J	0.050	0.0050	mg/L	1		6010B	TCLP
Mercury	0.000049	J B	0.00020	0.000020	mg/L	1		7470A	TCLP
Mercury	0.018	J	0.024	0.0093	mg/Kg	1	☼	7471A	Total/NA

# Detection Summary

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50268-1

**Client Sample ID: ECH-S-SP-3 (0.5-1)**

**Lab Sample ID: 500-50268-3**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Aluminum	700		25	5.2	mg/Kg	1		☼	6010B	Total/NA
Arsenic	0.81	J	1.2	0.27	mg/Kg	1		☼	6010B	Total/NA
Barium	16		1.2	0.15	mg/Kg	1		☼	6010B	Total/NA
Beryllium	0.32	J	0.49	0.036	mg/Kg	1		☼	6010B	Total/NA
Cadmium	0.86		0.25	0.061	mg/Kg	1		☼	6010B	Total/NA
Calcium	110000		25	4.4	mg/Kg	1		☼	6010B	Total/NA
Chromium	1.4		1.2	0.21	mg/Kg	1		☼	6010B	Total/NA
Copper	2.8		1.2	0.34	mg/Kg	1		☼	6010B	Total/NA
Iron	210		25	11	mg/Kg	1		☼	6010B	Total/NA
Lead	26		0.62	0.21	mg/Kg	1		☼	6010B	Total/NA
Magnesium	17		12	2.4	mg/Kg	1		☼	6010B	Total/NA
Manganese	5.2		1.2	0.17	mg/Kg	1		☼	6010B	Total/NA
Potassium	33	J	62	7.0	mg/Kg	1		☼	6010B	Total/NA
Silver	0.11	J	0.62	0.074	mg/Kg	1		☼	6010B	Total/NA
Sodium	130	B	120	23	mg/Kg	1		☼	6010B	Total/NA
Vanadium	0.45	J	0.62	0.094	mg/Kg	1		☼	6010B	Total/NA
Zinc	32		2.5	0.85	mg/Kg	1		☼	6010B	Total/NA
Barium	0.063	J	0.50	0.010	mg/L	1			6010B	TCLP
Cadmium	0.0074		0.0050	0.0020	mg/L	1			6010B	TCLP
Lead	0.050		0.050	0.0050	mg/L	1			6010B	TCLP
Mercury	0.000043	J B	0.00020	0.000020	mg/L	1			7470A	TCLP
Mercury	0.033		0.021	0.0081	mg/Kg	1		☼	7471A	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50268-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
7470A	Mercury (CVAA)	SW846	TAL CHI
7471A	Mercury (CVAA)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

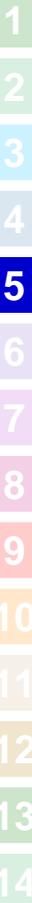
**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Sample Summary

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50268-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-50268-1	ECH-S-SP-1 (0.5-1)	Solid	09/18/12 14:20	09/18/12 15:30
500-50268-2	ECH-S-SP-2 (0.5-1)	Solid	09/18/12 14:40	09/18/12 15:30
500-50268-3	ECH-S-SP-3 (0.5-1)	Solid	09/18/12 15:00	09/18/12 15:30

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- 14

# Client Sample Results

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50268-1

**Client Sample ID: ECH-S-SP-1 (0.5-1)**

**Lab Sample ID: 500-50268-1**

Date Collected: 09/18/12 14:20

Matrix: Solid

Date Received: 09/18/12 15:30

Percent Solids: 60.1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	330		30	6.3	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Antimony	1.6	J	3.0	0.40	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Arsenic	4.7		1.5	0.33	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Barium	150		1.5	0.18	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Beryllium	0.11	J	0.60	0.044	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Cadmium	2.6		0.30	0.075	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Calcium	140000		30	5.3	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Chromium	2.3		1.5	0.25	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Cobalt	0.12	J	0.75	0.079	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Copper	9.6		1.5	0.41	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Iron	710		30	13	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Lead	170		0.75	0.26	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Magnesium	39		15	2.9	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Manganese	6.7		1.5	0.21	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Nickel	0.77	J	1.5	0.33	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Potassium	69	J	75	8.5	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Selenium	ND		1.5	0.43	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Silver	0.39	J	0.75	0.091	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Sodium	230	B	150	28	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Thallium	ND		1.5	0.39	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Vanadium	1.1		0.75	0.11	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1
Zinc	380		3.0	1.0	mg/Kg	☼	09/19/12 08:45	09/20/12 12:55	1

**Method: 6010B - Metals (ICP) - TCLP**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.015	J	0.050	0.010	mg/L		09/20/12 09:50	09/21/12 06:47	1
Barium	0.037	J	0.50	0.010	mg/L		09/20/12 09:50	09/21/12 06:47	1
Cadmium	0.042		0.0050	0.0020	mg/L		09/20/12 09:50	09/21/12 06:47	1
Chromium	ND		0.025	0.010	mg/L		09/20/12 09:50	09/21/12 06:47	1
Lead	0.43		0.050	0.0050	mg/L		09/20/12 09:50	09/21/12 06:47	1
Selenium	ND		0.050	0.010	mg/L		09/20/12 09:50	09/21/12 06:47	1
Silver	ND		0.025	0.0050	mg/L		09/20/12 09:50	09/21/12 06:47	1

**Method: 7470A - Mercury (CVAA) - TCLP**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.00013	J B	0.00020	0.000020	mg/L		09/20/12 15:00	09/21/12 11:33	1

**Method: 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.86		0.053	0.020	mg/Kg	☼	09/19/12 15:30	09/20/12 09:32	2

# Client Sample Results

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50268-1

**Client Sample ID: ECH-S-SP-2 (0.5-1)**

**Lab Sample ID: 500-50268-2**

Date Collected: 09/18/12 14:40

Matrix: Solid

Date Received: 09/18/12 15:30

Percent Solids: 67.4

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	400		27	5.7	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Antimony	ND		2.7	0.36	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Arsenic	0.97	J	1.4	0.30	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Barium	28		1.4	0.16	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Beryllium	0.19	J	0.55	0.040	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Cadmium	0.78		0.27	0.068	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Calcium	130000		27	4.8	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Chromium	1.9		1.4	0.23	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Cobalt	0.078	J	0.68	0.072	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Copper	1.1	J	1.4	0.37	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Iron	560		27	12	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Lead	33		0.68	0.24	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Magnesium	17		14	2.7	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Manganese	12		1.4	0.19	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Nickel	ND		1.4	0.30	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Potassium	52	J	68	7.7	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Selenium	ND		1.4	0.39	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Silver	0.14	J	0.68	0.082	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Sodium	130	J B	140	25	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Thallium	ND		1.4	0.35	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Vanadium	0.72		0.68	0.10	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1
Zinc	19		2.7	0.94	mg/Kg	☼	09/19/12 08:45	09/20/12 13:01	1

**Method: 6010B - Metals (ICP) - TCLP**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.050	0.010	mg/L		09/20/12 09:50	09/21/12 07:08	1
Barium	0.043	J	0.50	0.010	mg/L		09/20/12 09:50	09/21/12 07:08	1
Cadmium	0.0029	J	0.0050	0.0020	mg/L		09/20/12 09:50	09/21/12 07:08	1
Chromium	ND		0.025	0.010	mg/L		09/20/12 09:50	09/21/12 07:08	1
Lead	0.027	J	0.050	0.0050	mg/L		09/20/12 09:50	09/21/12 07:08	1
Selenium	ND		0.050	0.010	mg/L		09/20/12 09:50	09/21/12 07:08	1
Silver	ND		0.025	0.0050	mg/L		09/20/12 09:50	09/21/12 07:08	1

**Method: 7470A - Mercury (CVAA) - TCLP**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000049	J B	0.00020	0.000020	mg/L		09/20/12 15:00	09/21/12 11:39	1

**Method: 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.018	J	0.024	0.0093	mg/Kg	☼	09/19/12 15:30	09/20/12 09:06	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50268-1

**Client Sample ID: ECH-S-SP-3 (0.5-1)**

**Lab Sample ID: 500-50268-3**

Date Collected: 09/18/12 15:00

Matrix: Solid

Date Received: 09/18/12 15:30

Percent Solids: 72.9

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	700		25	5.2	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Antimony	ND		2.5	0.33	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Arsenic	0.81	J	1.2	0.27	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Barium	16		1.2	0.15	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Beryllium	0.32	J	0.49	0.036	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Cadmium	0.86		0.25	0.061	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Calcium	110000		25	4.4	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Chromium	1.4		1.2	0.21	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Cobalt	ND		0.62	0.065	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Copper	2.8		1.2	0.34	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Iron	210		25	11	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Lead	26		0.62	0.21	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Magnesium	17		12	2.4	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Manganese	5.2		1.2	0.17	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Nickel	ND		1.2	0.27	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Potassium	33	J	62	7.0	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Selenium	ND		1.2	0.35	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Silver	0.11	J	0.62	0.074	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Sodium	130	B	120	23	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Thallium	ND		1.2	0.32	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Vanadium	0.45	J	0.62	0.094	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1
Zinc	32		2.5	0.85	mg/Kg	☼	09/19/12 08:45	09/20/12 13:07	1

**Method: 6010B - Metals (ICP) - TCLP**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.050	0.010	mg/L		09/20/12 09:50	09/21/12 07:14	1
Barium	0.063	J	0.50	0.010	mg/L		09/20/12 09:50	09/21/12 07:14	1
Cadmium	0.0074		0.0050	0.0020	mg/L		09/20/12 09:50	09/21/12 07:14	1
Chromium	ND		0.025	0.010	mg/L		09/20/12 09:50	09/21/12 07:14	1
Lead	0.050		0.050	0.0050	mg/L		09/20/12 09:50	09/21/12 07:14	1
Selenium	ND		0.050	0.010	mg/L		09/20/12 09:50	09/21/12 07:14	1
Silver	ND		0.025	0.0050	mg/L		09/20/12 09:50	09/21/12 07:14	1

**Method: 7470A - Mercury (CVAA) - TCLP**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000043	J B	0.00020	0.000020	mg/L		09/20/12 15:00	09/21/12 11:40	1

**Method: 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.033		0.021	0.0081	mg/Kg	☼	09/19/12 15:30	09/20/12 09:08	1

# Definitions/Glossary

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50268-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50268-1

## Metals

### Prep Batch: 163079

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50268-1	ECH-S-SP-1 (0.5-1)	Total/NA	Solid	3050B	
500-50268-2	ECH-S-SP-2 (0.5-1)	Total/NA	Solid	3050B	
500-50268-3	ECH-S-SP-3 (0.5-1)	Total/NA	Solid	3050B	
LCS 500-163079/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-163079/1-A	Method Blank	Total/NA	Solid	3050B	

### Prep Batch: 163115

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50268-1	ECH-S-SP-1 (0.5-1)	Total/NA	Solid	7471A	
500-50268-2	ECH-S-SP-2 (0.5-1)	Total/NA	Solid	7471A	
500-50268-3	ECH-S-SP-3 (0.5-1)	Total/NA	Solid	7471A	
LCS 500-163115/8-A	Lab Control Sample	Total/NA	Solid	7471A	
MB 500-163115/7-A	Method Blank	Total/NA	Solid	7471A	

### Leach Batch: 163138

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50268-1	ECH-S-SP-1 (0.5-1)	TCLP	Solid	1311	
500-50268-2	ECH-S-SP-2 (0.5-1)	TCLP	Solid	1311	
500-50268-3	ECH-S-SP-3 (0.5-1)	TCLP	Solid	1311	
LB 500-163138/1-B LB	Method Blank	TCLP	Solid	1311	
LB 500-163138/1-C LB	Method Blank	TCLP	Solid	1311	

### Analysis Batch: 163246

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50268-1	ECH-S-SP-1 (0.5-1)	Total/NA	Solid	7471A	163115
500-50268-2	ECH-S-SP-2 (0.5-1)	Total/NA	Solid	7471A	163115
500-50268-3	ECH-S-SP-3 (0.5-1)	Total/NA	Solid	7471A	163115
LCS 500-163115/8-A	Lab Control Sample	Total/NA	Solid	7471A	163115
MB 500-163115/7-A	Method Blank	Total/NA	Solid	7471A	163115

### Prep Batch: 163247

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50268-1	ECH-S-SP-1 (0.5-1)	TCLP	Solid	3010A	163138
500-50268-2	ECH-S-SP-2 (0.5-1)	TCLP	Solid	3010A	163138
500-50268-3	ECH-S-SP-3 (0.5-1)	TCLP	Solid	3010A	163138
LB 500-163138/1-B LB	Method Blank	TCLP	Solid	3010A	163138
LCS 500-163247/3-A	Lab Control Sample	Total/NA	Solid	3010A	

### Prep Batch: 163276

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50268-1	ECH-S-SP-1 (0.5-1)	TCLP	Solid	7470A	163138
500-50268-2	ECH-S-SP-2 (0.5-1)	TCLP	Solid	7470A	163138
500-50268-3	ECH-S-SP-3 (0.5-1)	TCLP	Solid	7470A	163138
LB 500-163138/1-C LB	Method Blank	TCLP	Solid	7470A	163138
LCS 500-163276/8-A	Lab Control Sample	Total/NA	Solid	7470A	
MB 500-163276/7-A	Method Blank	Total/NA	Solid	7470A	

### Analysis Batch: 163288

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50268-1	ECH-S-SP-1 (0.5-1)	Total/NA	Solid	6010B	163079
500-50268-2	ECH-S-SP-2 (0.5-1)	Total/NA	Solid	6010B	163079
500-50268-3	ECH-S-SP-3 (0.5-1)	Total/NA	Solid	6010B	163079

# QC Association Summary

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50268-1

## Metals (Continued)

### Analysis Batch: 163288 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 500-163079/2-A	Lab Control Sample	Total/NA	Solid	6010B	163079
MB 500-163079/1-A	Method Blank	Total/NA	Solid	6010B	163079

### Analysis Batch: 163354

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50268-1	ECH-S-SP-1 (0.5-1)	TCLP	Solid	6010B	163247
500-50268-2	ECH-S-SP-2 (0.5-1)	TCLP	Solid	6010B	163247
500-50268-3	ECH-S-SP-3 (0.5-1)	TCLP	Solid	6010B	163247
LB 500-163138/1-B LB	Method Blank	TCLP	Solid	6010B	163247
LCS 500-163247/3-A	Lab Control Sample	Total/NA	Solid	6010B	163247

### Analysis Batch: 163410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50268-1	ECH-S-SP-1 (0.5-1)	TCLP	Solid	7470A	163276
500-50268-2	ECH-S-SP-2 (0.5-1)	TCLP	Solid	7470A	163276
500-50268-3	ECH-S-SP-3 (0.5-1)	TCLP	Solid	7470A	163276
LB 500-163138/1-C LB	Method Blank	TCLP	Solid	7470A	163276
LCS 500-163276/8-A	Lab Control Sample	Total/NA	Solid	7470A	163276
MB 500-163276/7-A	Method Blank	Total/NA	Solid	7470A	163276

## General Chemistry

### Analysis Batch: 163076

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50268-1	ECH-S-SP-1 (0.5-1)	Total/NA	Solid	Moisture	
500-50268-2	ECH-S-SP-2 (0.5-1)	Total/NA	Solid	Moisture	
500-50268-3	ECH-S-SP-3 (0.5-1)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50268-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-163079/1-A**  
**Matrix: Solid**  
**Analysis Batch: 163288**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 163079**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		20	4.2	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Antimony	ND		2.0	0.27	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Arsenic	ND		1.0	0.22	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Barium	ND		1.0	0.12	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Beryllium	ND		0.40	0.029	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Cadmium	ND		0.20	0.050	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Calcium	ND		20	3.5	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Chromium	ND		1.0	0.17	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Cobalt	ND		0.50	0.053	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Copper	ND		1.0	0.27	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Iron	ND		20	8.7	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Lead	ND		0.50	0.17	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Magnesium	ND		10	1.9	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Manganese	ND		1.0	0.14	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Nickel	ND		1.0	0.22	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Potassium	ND		50	5.7	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Selenium	ND		1.0	0.29	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Silver	ND		0.50	0.060	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Sodium	22.8	J	100	18	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Thallium	ND		1.0	0.26	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Vanadium	ND		0.50	0.076	mg/Kg		09/19/12 08:45	09/20/12 11:07	1
Zinc	ND		2.0	0.69	mg/Kg		09/19/12 08:45	09/20/12 11:07	1

**Lab Sample ID: LCS 500-163079/2-A**  
**Matrix: Solid**  
**Analysis Batch: 163288**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 163079**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	200	192		mg/Kg		96	80 - 120
Antimony	50.0	47.1		mg/Kg		94	80 - 120
Arsenic	10.0	9.17		mg/Kg		92	80 - 120
Barium	200	195		mg/Kg		98	80 - 120
Beryllium	5.00	4.82		mg/Kg		96	80 - 120
Cadmium	5.00	4.75		mg/Kg		95	80 - 120
Calcium	1000	969		mg/Kg		97	80 - 120
Chromium	20.0	19.7		mg/Kg		98	80 - 120
Cobalt	50.0	48.1		mg/Kg		96	80 - 120
Copper	25.0	24.6		mg/Kg		98	80 - 120
Iron	100	97.6		mg/Kg		98	80 - 120
Lead	10.0	9.86		mg/Kg		99	80 - 120
Magnesium	1000	954		mg/Kg		95	80 - 120
Manganese	50.0	50.0		mg/Kg		100	80 - 120
Nickel	50.0	48.2		mg/Kg		96	80 - 120
Potassium	1000	963		mg/Kg		96	80 - 120
Selenium	10.0	8.52		mg/Kg		85	80 - 120
Silver	5.00	4.77		mg/Kg		95	80 - 120
Sodium	1000	966		mg/Kg		97	80 - 120
Thallium	10.0	9.33		mg/Kg		93	80 - 120
Vanadium	50.0	49.0		mg/Kg		98	80 - 120
Zinc	50.0	47.6		mg/Kg		95	80 - 120

# QC Sample Results

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50268-1

## Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: LCS 500-163247/3-A  
Matrix: Solid  
Analysis Batch: 163354

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 163247

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.100	0.0895		mg/L		89	80 - 120
Barium	0.500	0.489	J	mg/L		98	80 - 120
Cadmium	0.0500	0.0468		mg/L		94	80 - 120
Chromium	0.200	0.191		mg/L		95	80 - 120
Lead	0.100	0.0955		mg/L		95	80 - 120
Selenium	0.100	0.0842		mg/L		84	80 - 120
Silver	0.0500	0.0466		mg/L		93	80 - 120

Lab Sample ID: LB 500-163138/1-B LB  
Matrix: Solid  
Analysis Batch: 163354

Client Sample ID: Method Blank  
Prep Type: TCLP  
Prep Batch: 163247

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.050	0.010	mg/L		09/20/12 09:50	09/21/12 04:58	1
Barium	ND		0.50	0.010	mg/L		09/20/12 09:50	09/21/12 04:58	1
Cadmium	ND		0.0050	0.0020	mg/L		09/20/12 09:50	09/21/12 04:58	1
Chromium	ND		0.025	0.010	mg/L		09/20/12 09:50	09/21/12 04:58	1
Lead	ND		0.050	0.0050	mg/L		09/20/12 09:50	09/21/12 04:58	1
Selenium	ND		0.050	0.010	mg/L		09/20/12 09:50	09/21/12 04:58	1
Silver	ND		0.025	0.0050	mg/L		09/20/12 09:50	09/21/12 04:58	1

## Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 500-163276/7-A  
Matrix: Solid  
Analysis Batch: 163410

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 163276

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0000392	J	0.00020	0.000020	mg/L		09/20/12 15:00	09/21/12 11:01	1

Lab Sample ID: LCS 500-163276/8-A  
Matrix: Solid  
Analysis Batch: 163410

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 163276

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00200	0.00207		mg/L		103	80 - 120

Lab Sample ID: LB 500-163138/1-C LB  
Matrix: Solid  
Analysis Batch: 163410

Client Sample ID: Method Blank  
Prep Type: TCLP  
Prep Batch: 163276

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000020	mg/L		09/20/12 15:00	09/21/12 11:04	1

# QC Sample Results

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50268-1

## Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 500-163115/7-A  
 Matrix: Solid  
 Analysis Batch: 163246

Client Sample ID: Method Blank  
 Prep Type: Total/NA  
 Prep Batch: 163115

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.017	0.0064	mg/Kg		09/19/12 15:30	09/20/12 08:36	1

Lab Sample ID: LCS 500-163115/8-A  
 Matrix: Solid  
 Analysis Batch: 163246

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA  
 Prep Batch: 163115

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.167	0.178		mg/Kg		107	80 - 120



# Lab Chronicle

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50268-1

## Client Sample ID: ECH-S-SP-1 (0.5-1)

Lab Sample ID: 500-50268-1

Date Collected: 09/18/12 14:20

Matrix: Solid

Date Received: 09/18/12 15:30

Percent Solids: 60.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7471A			163115	09/19/12 15:30	BJB	TAL CHI
Total/NA	Analysis	7471A		2	163246	09/20/12 09:32	BJB	TAL CHI
Total/NA	Prep	3050B			163079	09/19/12 08:45	PFK	TAL CHI
Total/NA	Analysis	6010B		1	163288	09/20/12 12:55	TDS	TAL CHI
TCLP	Leach	1311			163138	09/19/12 14:25	MP	TAL CHI
TCLP	Prep	3010A			163247	09/20/12 09:50	LAH	TAL CHI
TCLP	Analysis	6010B		1	163354	09/21/12 06:47	TDS	TAL CHI
TCLP	Prep	7470A			163276	09/20/12 15:00	BJB	TAL CHI
TCLP	Analysis	7470A		1	163410	09/21/12 11:33	BJB	TAL CHI
Total/NA	Analysis	Moisture		1	163076	09/19/12 07:58	CMV	TAL CHI

## Client Sample ID: ECH-S-SP-2 (0.5-1)

Lab Sample ID: 500-50268-2

Date Collected: 09/18/12 14:40

Matrix: Solid

Date Received: 09/18/12 15:30

Percent Solids: 67.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7471A			163115	09/19/12 15:30	BJB	TAL CHI
Total/NA	Analysis	7471A		1	163246	09/20/12 09:06	BJB	TAL CHI
Total/NA	Prep	3050B			163079	09/19/12 08:45	PFK	TAL CHI
Total/NA	Analysis	6010B		1	163288	09/20/12 13:01	TDS	TAL CHI
TCLP	Leach	1311			163138	09/19/12 14:25	MP	TAL CHI
TCLP	Prep	3010A			163247	09/20/12 09:50	LAH	TAL CHI
TCLP	Analysis	6010B		1	163354	09/21/12 07:08	TDS	TAL CHI
TCLP	Prep	7470A			163276	09/20/12 15:00	BJB	TAL CHI
TCLP	Analysis	7470A		1	163410	09/21/12 11:39	BJB	TAL CHI
Total/NA	Analysis	Moisture		1	163076	09/19/12 07:58	CMV	TAL CHI

## Client Sample ID: ECH-S-SP-3 (0.5-1)

Lab Sample ID: 500-50268-3

Date Collected: 09/18/12 15:00

Matrix: Solid

Date Received: 09/18/12 15:30

Percent Solids: 72.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7471A			163115	09/19/12 15:30	BJB	TAL CHI
Total/NA	Analysis	7471A		1	163246	09/20/12 09:08	BJB	TAL CHI
Total/NA	Prep	3050B			163079	09/19/12 08:45	PFK	TAL CHI
Total/NA	Analysis	6010B		1	163288	09/20/12 13:07	TDS	TAL CHI
TCLP	Leach	1311			163138	09/19/12 14:25	MP	TAL CHI
TCLP	Prep	3010A			163247	09/20/12 09:50	LAH	TAL CHI
TCLP	Analysis	6010B		1	163354	09/21/12 07:14	TDS	TAL CHI
TCLP	Prep	7470A			163276	09/20/12 15:00	BJB	TAL CHI
TCLP	Analysis	7470A		1	163410	09/21/12 11:40	BJB	TAL CHI
Total/NA	Analysis	Moisture		1	163076	09/19/12 07:58	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50268-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-12
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13



## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-50268-1

**Login Number: 50268**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Lunt, Jeff T**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	4.2
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	True	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-51609-1  
Client Project/Site: IRM Sampling

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
10/29/2012 1:37:00 PM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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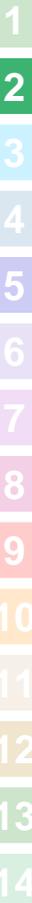
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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51609-1

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**Job ID: 500-51609-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-51609-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 10/23/2012 4:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.2° C.

**Metals**

Method(s) 6010B: The matrix duplicate %RPD for sample 500-51609-5 was outside the control limits for Cd and Pb.

Method(s) 6010B: The matrix spike / matrix spike duplicate (MS/MSD) precision for sample 500-51609-5 was outside control limits for Pb. The associated laboratory control sample (LCS) met acceptance criteria.

No other analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51609-1

## Client Sample ID: ECH-S-IRM1-BFZ-32 (0-2)

Lab Sample ID: 500-51609-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	56		1.6	0.35	mg/Kg	1	*	6010B	Total/NA
Cadmium	40		0.32	0.080	mg/Kg	1	*	6010B	Total/NA
Lead	4600		0.80	0.28	mg/Kg	1	*	6010B	Total/NA
Zinc	8800	B	64	22	mg/Kg	20	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-BFZ-33 (0-2)

Lab Sample ID: 500-51609-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	41		1.1	0.24	mg/Kg	1	*	6010B	Total/NA
Cadmium	14		0.22	0.054	mg/Kg	1	*	6010B	Total/NA
Lead	940		0.54	0.19	mg/Kg	1	*	6010B	Total/NA
Zinc	4400	B	43	15	mg/Kg	20	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-BFZ-37 (0-2)

Lab Sample ID: 500-51609-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	5.1		1.0	0.22	mg/Kg	1	*	6010B	Total/NA
Cadmium	8.8		0.21	0.051	mg/Kg	1	*	6010B	Total/NA
Lead	300		0.51	0.18	mg/Kg	1	*	6010B	Total/NA
Zinc	880	B	2.1	0.70	mg/Kg	1	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-BFZ-37 (0-2) DUP

Lab Sample ID: 500-51609-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	5.7		0.99	0.22	mg/Kg	1	*	6010B	Total/NA
Cadmium	10		0.20	0.049	mg/Kg	1	*	6010B	Total/NA
Lead	370		0.50	0.17	mg/Kg	1	*	6010B	Total/NA
Zinc	940	B	2.0	0.68	mg/Kg	1	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-BFZ-38 (0-2)

Lab Sample ID: 500-51609-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.4		1.2	0.26	mg/Kg	1	*	6010B	Total/NA
Cadmium	1.8		0.24	0.059	mg/Kg	1	*	6010B	Total/NA
Lead	55		0.59	0.20	mg/Kg	1	*	6010B	Total/NA
Zinc	380	B	2.4	0.81	mg/Kg	1	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-BFZ-39 (0-2)

Lab Sample ID: 500-51609-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.1		1.2	0.26	mg/Kg	1	*	6010B	Total/NA
Cadmium	3.0		0.24	0.059	mg/Kg	1	*	6010B	Total/NA
Lead	32		0.60	0.20	mg/Kg	1	*	6010B	Total/NA
Zinc	600	B	2.4	0.82	mg/Kg	1	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-BFZ-40 (0-2)

Lab Sample ID: 500-51609-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.3		1.4	0.29	mg/Kg	1	*	6010B	Total/NA
Cadmium	3.4		0.27	0.067	mg/Kg	1	*	6010B	Total/NA
Lead	42		0.68	0.23	mg/Kg	1	*	6010B	Total/NA
Zinc	630	B	2.7	0.93	mg/Kg	1	*	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51609-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

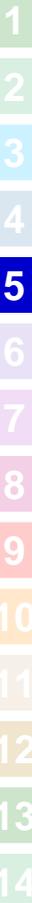
**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

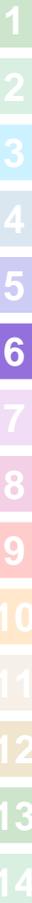


# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51609-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-51609-1	ECH-S-IRM1-BFZ-32 (0-2)	Solid	10/23/12 13:15	10/23/12 16:10
500-51609-2	ECH-S-IRM1-BFZ-33 (0-2)	Solid	10/23/12 13:20	10/23/12 16:10
500-51609-3	ECH-S-IRM1-BFZ-37 (0-2)	Solid	10/23/12 13:25	10/23/12 16:10
500-51609-4	ECH-S-IRM1-BFZ-37 (0-2) DUP	Solid	10/23/12 13:30	10/23/12 16:10
500-51609-5	ECH-S-IRM1-BFZ-38 (0-2)	Solid	10/23/12 13:30	10/23/12 16:10
500-51609-6	ECH-S-IRM1-BFZ-39 (0-2)	Solid	10/23/12 14:40	10/23/12 16:10
500-51609-7	ECH-S-IRM1-BFZ-40 (0-2)	Solid	10/23/12 13:45	10/23/12 16:10



# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51609-1

**Client Sample ID: ECH-S-IRM1-BFZ-32 (0-2)**

**Lab Sample ID: 500-51609-1**

Date Collected: 10/23/12 13:15

Matrix: Solid

Date Received: 10/23/12 16:10

Percent Solids: 56.4

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	56		1.6	0.35	mg/Kg	✱	10/25/12 18:00	10/27/12 01:44	1
Cadmium	40		0.32	0.080	mg/Kg	✱	10/25/12 18:00	10/27/12 01:44	1
Lead	4600		0.80	0.28	mg/Kg	✱	10/25/12 18:00	10/27/12 01:44	1
Zinc	8800	B	64	22	mg/Kg	✱	10/25/12 18:00	10/27/12 15:44	20



# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51609-1

**Client Sample ID: ECH-S-IRM1-BFZ-33 (0-2)**

**Lab Sample ID: 500-51609-2**

Date Collected: 10/23/12 13:20

Matrix: Solid

Date Received: 10/23/12 16:10

Percent Solids: 88.1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	41		1.1	0.24	mg/Kg	✱	10/25/12 18:00	10/27/12 01:49	1
Cadmium	14		0.22	0.054	mg/Kg	✱	10/25/12 18:00	10/27/12 01:49	1
Lead	940		0.54	0.19	mg/Kg	✱	10/25/12 18:00	10/27/12 01:49	1
Zinc	4400	B	43	15	mg/Kg	✱	10/25/12 18:00	10/27/12 15:48	20

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51609-1

**Client Sample ID: ECH-S-IRM1-BFZ-37 (0-2)**

**Lab Sample ID: 500-51609-3**

**Date Collected: 10/23/12 13:25**

**Matrix: Solid**

**Date Received: 10/23/12 16:10**

**Percent Solids: 93.0**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.1		1.0	0.22	mg/Kg	✱	10/25/12 18:00	10/27/12 01:54	1
Cadmium	8.8		0.21	0.051	mg/Kg	✱	10/25/12 18:00	10/27/12 01:54	1
Lead	300		0.51	0.18	mg/Kg	✱	10/25/12 18:00	10/27/12 01:54	1
Zinc	880	B	2.1	0.70	mg/Kg	✱	10/25/12 18:00	10/27/12 15:52	1

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51609-1

**Client Sample ID: ECH-S-IRM1-BFZ-37 (0-2) DUP**

**Lab Sample ID: 500-51609-4**

Date Collected: 10/23/12 13:30

Matrix: Solid

Date Received: 10/23/12 16:10

Percent Solids: 92.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.7		0.99	0.22	mg/Kg	✱	10/25/12 18:00	10/27/12 01:58	1
Cadmium	10		0.20	0.049	mg/Kg	✱	10/25/12 18:00	10/27/12 01:58	1
Lead	370		0.50	0.17	mg/Kg	✱	10/25/12 18:00	10/27/12 01:58	1
Zinc	940	B	2.0	0.68	mg/Kg	✱	10/25/12 18:00	10/27/12 15:56	1

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51609-1

**Client Sample ID: ECH-S-IRM1-BFZ-38 (0-2)**

**Lab Sample ID: 500-51609-5**

Date Collected: 10/23/12 13:30

Matrix: Solid

Date Received: 10/23/12 16:10

Percent Solids: 83.0

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.4		1.2	0.26	mg/Kg	✱	10/25/12 18:00	10/27/12 02:02	1
Cadmium	1.8		0.24	0.059	mg/Kg	✱	10/25/12 18:00	10/27/12 02:02	1
Lead	55		0.59	0.20	mg/Kg	✱	10/25/12 18:00	10/27/12 02:02	1
Zinc	380	B	2.4	0.81	mg/Kg	✱	10/25/12 18:00	10/27/12 16:00	1

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51609-1

**Client Sample ID: ECH-S-IRM1-BFZ-39 (0-2)**

**Lab Sample ID: 500-51609-6**

Date Collected: 10/23/12 14:40

Matrix: Solid

Date Received: 10/23/12 16:10

Percent Solids: 82.8

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.1		1.2	0.26	mg/Kg	✱	10/25/12 18:00	10/27/12 02:32	1
Cadmium	3.0		0.24	0.059	mg/Kg	✱	10/25/12 18:00	10/27/12 02:32	1
Lead	32		0.60	0.20	mg/Kg	✱	10/25/12 18:00	10/27/12 02:32	1
Zinc	600	B	2.4	0.82	mg/Kg	✱	10/25/12 18:00	10/27/12 16:29	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51609-1

**Client Sample ID: ECH-S-IRM1-BFZ-40 (0-2)**

**Lab Sample ID: 500-51609-7**

Date Collected: 10/23/12 13:45

Matrix: Solid

Date Received: 10/23/12 16:10

Percent Solids: 66.0

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.3		1.4	0.29	mg/Kg	✱	10/25/12 18:00	10/27/12 02:36	1
Cadmium	3.4		0.27	0.067	mg/Kg	✱	10/25/12 18:00	10/27/12 02:36	1
Lead	42		0.68	0.23	mg/Kg	✱	10/25/12 18:00	10/27/12 02:36	1
Zinc	630	B	2.7	0.93	mg/Kg	✱	10/25/12 18:00	10/27/12 16:33	1

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# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51609-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
F	Duplicate RPD exceeds the control limit
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
F	RPD of the MS and MSD exceeds the control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51609-1

## Metals

### Prep Batch: 167349

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51609-1	ECH-S-IRM1-BFZ-32 (0-2)	Total/NA	Solid	3050B	
500-51609-2	ECH-S-IRM1-BFZ-33 (0-2)	Total/NA	Solid	3050B	
500-51609-3	ECH-S-IRM1-BFZ-37 (0-2)	Total/NA	Solid	3050B	
500-51609-4	ECH-S-IRM1-BFZ-37 (0-2) DUP	Total/NA	Solid	3050B	
500-51609-5	ECH-S-IRM1-BFZ-38 (0-2)	Total/NA	Solid	3050B	
500-51609-5 DU	ECH-S-IRM1-BFZ-38 (0-2)	Total/NA	Solid	3050B	
500-51609-5 MS	ECH-S-IRM1-BFZ-38 (0-2)	Total/NA	Solid	3050B	
500-51609-5 MSD	ECH-S-IRM1-BFZ-38 (0-2)	Total/NA	Solid	3050B	
500-51609-6	ECH-S-IRM1-BFZ-39 (0-2)	Total/NA	Solid	3050B	
500-51609-7	ECH-S-IRM1-BFZ-40 (0-2)	Total/NA	Solid	3050B	
LCS 500-167349/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-167349/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 167539

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51609-1	ECH-S-IRM1-BFZ-32 (0-2)	Total/NA	Solid	6010B	167349
500-51609-2	ECH-S-IRM1-BFZ-33 (0-2)	Total/NA	Solid	6010B	167349
500-51609-3	ECH-S-IRM1-BFZ-37 (0-2)	Total/NA	Solid	6010B	167349
500-51609-4	ECH-S-IRM1-BFZ-37 (0-2) DUP	Total/NA	Solid	6010B	167349
500-51609-5	ECH-S-IRM1-BFZ-38 (0-2)	Total/NA	Solid	6010B	167349
500-51609-5 DU	ECH-S-IRM1-BFZ-38 (0-2)	Total/NA	Solid	6010B	167349
500-51609-5 MS	ECH-S-IRM1-BFZ-38 (0-2)	Total/NA	Solid	6010B	167349
500-51609-5 MSD	ECH-S-IRM1-BFZ-38 (0-2)	Total/NA	Solid	6010B	167349
500-51609-6	ECH-S-IRM1-BFZ-39 (0-2)	Total/NA	Solid	6010B	167349
500-51609-7	ECH-S-IRM1-BFZ-40 (0-2)	Total/NA	Solid	6010B	167349
LCS 500-167349/2-A	Lab Control Sample	Total/NA	Solid	6010B	167349
MB 500-167349/1-A	Method Blank	Total/NA	Solid	6010B	167349

### Analysis Batch: 167630

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51609-1	ECH-S-IRM1-BFZ-32 (0-2)	Total/NA	Solid	6010B	167349
500-51609-2	ECH-S-IRM1-BFZ-33 (0-2)	Total/NA	Solid	6010B	167349
500-51609-3	ECH-S-IRM1-BFZ-37 (0-2)	Total/NA	Solid	6010B	167349
500-51609-4	ECH-S-IRM1-BFZ-37 (0-2) DUP	Total/NA	Solid	6010B	167349
500-51609-5	ECH-S-IRM1-BFZ-38 (0-2)	Total/NA	Solid	6010B	167349
500-51609-5 DU	ECH-S-IRM1-BFZ-38 (0-2)	Total/NA	Solid	6010B	167349
500-51609-5 MS	ECH-S-IRM1-BFZ-38 (0-2)	Total/NA	Solid	6010B	167349
500-51609-5 MSD	ECH-S-IRM1-BFZ-38 (0-2)	Total/NA	Solid	6010B	167349
500-51609-6	ECH-S-IRM1-BFZ-39 (0-2)	Total/NA	Solid	6010B	167349
500-51609-7	ECH-S-IRM1-BFZ-40 (0-2)	Total/NA	Solid	6010B	167349
LCS 500-167349/2-A	Lab Control Sample	Total/NA	Solid	6010B	167349
MB 500-167349/1-A	Method Blank	Total/NA	Solid	6010B	167349

## General Chemistry

### Analysis Batch: 167152

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51609-1	ECH-S-IRM1-BFZ-32 (0-2)	Total/NA	Solid	Moisture	
500-51609-2	ECH-S-IRM1-BFZ-33 (0-2)	Total/NA	Solid	Moisture	
500-51609-3	ECH-S-IRM1-BFZ-37 (0-2)	Total/NA	Solid	Moisture	
500-51609-4	ECH-S-IRM1-BFZ-37 (0-2) DUP	Total/NA	Solid	Moisture	
500-51609-5	ECH-S-IRM1-BFZ-38 (0-2)	Total/NA	Solid	Moisture	

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51609-1

## General Chemistry (Continued)

### Analysis Batch: 167152 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51609-5 DU	ECH-S-IRM1-BFZ-38 (0-2)	Total/NA	Solid	Moisture	
500-51609-5 MS	ECH-S-IRM1-BFZ-38 (0-2)	Total/NA	Solid	Moisture	
500-51609-5 MSD	ECH-S-IRM1-BFZ-38 (0-2)	Total/NA	Solid	Moisture	
500-51609-6	ECH-S-IRM1-BFZ-39 (0-2)	Total/NA	Solid	Moisture	
500-51609-7	ECH-S-IRM1-BFZ-40 (0-2)	Total/NA	Solid	Moisture	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51609-1

## Method: 6010B - Metals (ICP)

Lab Sample ID: MB 500-167349/1-A  
Matrix: Solid  
Analysis Batch: 167539

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 167349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		10/25/12 18:00	10/27/12 01:31	1
Cadmium	ND		0.20	0.050	mg/Kg		10/25/12 18:00	10/27/12 01:31	1
Lead	ND		0.50	0.17	mg/Kg		10/25/12 18:00	10/27/12 01:31	1

Lab Sample ID: MB 500-167349/1-A  
Matrix: Solid  
Analysis Batch: 167630

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 167349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	1.12	J	2.0	0.69	mg/Kg		10/25/12 18:00	10/27/12 15:36	1

Lab Sample ID: LCS 500-167349/2-A  
Matrix: Solid  
Analysis Batch: 167539

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 167349

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.18		mg/Kg		92	80 - 120
Cadmium	5.00	4.48		mg/Kg		90	80 - 120
Lead	10.0	9.47		mg/Kg		95	80 - 120

Lab Sample ID: LCS 500-167349/2-A  
Matrix: Solid  
Analysis Batch: 167630

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 167349

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	50.0	46.3		mg/Kg		93	80 - 120

Lab Sample ID: 500-51609-5 MS  
Matrix: Solid  
Analysis Batch: 167539

Client Sample ID: ECH-S-IRM1-BFZ-38 (0-2)  
Prep Type: Total/NA  
Prep Batch: 167349

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	2.4		11.5	13.3		mg/Kg	☼	95	75 - 125
Cadmium	1.8		5.76	7.42		mg/Kg	☼	98	75 - 125
Lead	55		11.5	115	4	mg/Kg	☼	517	75 - 125

Lab Sample ID: 500-51609-5 MS  
Matrix: Solid  
Analysis Batch: 167630

Client Sample ID: ECH-S-IRM1-BFZ-38 (0-2)  
Prep Type: Total/NA  
Prep Batch: 167349

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	380	B	57.6	534	4	mg/Kg	☼	266	75 - 125

Lab Sample ID: 500-51609-5 MSD  
Matrix: Solid  
Analysis Batch: 167539

Client Sample ID: ECH-S-IRM1-BFZ-38 (0-2)  
Prep Type: Total/NA  
Prep Batch: 167349

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	2.4		10.7	12.8		mg/Kg	☼	97	75 - 125	4	20
Cadmium	1.8		5.36	7.97		mg/Kg	☼	116	75 - 125	7	20
Lead	55		10.7	79.1	4 F	mg/Kg	☼	221	75 - 125	37	20

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51609-1

## Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: 500-51609-5 MSD

Matrix: Solid

Analysis Batch: 167630

Client Sample ID: ECH-S-IRM1-BFZ-38 (0-2)

Prep Type: Total/NA

Prep Batch: 167349

Analyte	Sample	Sample	Spike Added	MSD	MSD	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
	Result	Qualifier		Result	Qualifier						
Zinc	380	B	53.6	544	4	mg/Kg	⊛	304	75 - 125	2	20

Lab Sample ID: 500-51609-5 DU

Matrix: Solid

Analysis Batch: 167539

Client Sample ID: ECH-S-IRM1-BFZ-38 (0-2)

Prep Type: Total/NA

Prep Batch: 167349

Analyte	Sample	Sample	DU Result	DU	Unit	D	RPD	RPD Limit
	Result	Qualifier		Qualifier				
Arsenic	2.4		2.57		mg/Kg	⊛	6	20
Cadmium	1.8		2.47	F	mg/Kg	⊛	32	20
Lead	55		81.4	F	mg/Kg	⊛	38	20

Lab Sample ID: 500-51609-5 DU

Matrix: Solid

Analysis Batch: 167630

Client Sample ID: ECH-S-IRM1-BFZ-38 (0-2)

Prep Type: Total/NA

Prep Batch: 167349

Analyte	Sample	Sample	DU Result	DU	Unit	D	RPD	RPD Limit
	Result	Qualifier		Qualifier				
Zinc	380	B	442		mg/Kg	⊛	15	20

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51609-1

## Client Sample ID: ECH-S-IRM1-BFZ-32 (0-2)

Lab Sample ID: 500-51609-1

Date Collected: 10/23/12 13:15

Matrix: Solid

Date Received: 10/23/12 16:10

Percent Solids: 56.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167349	10/25/12 18:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 01:44	TDS	TAL CHI
Total/NA	Analysis	6010B		20	167630	10/27/12 15:44	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167152	10/24/12 14:54	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-BFZ-33 (0-2)

Lab Sample ID: 500-51609-2

Date Collected: 10/23/12 13:20

Matrix: Solid

Date Received: 10/23/12 16:10

Percent Solids: 88.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167349	10/25/12 18:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 01:49	TDS	TAL CHI
Total/NA	Analysis	6010B		20	167630	10/27/12 15:48	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167152	10/24/12 14:54	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-BFZ-37 (0-2)

Lab Sample ID: 500-51609-3

Date Collected: 10/23/12 13:25

Matrix: Solid

Date Received: 10/23/12 16:10

Percent Solids: 93.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167349	10/25/12 18:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 01:54	TDS	TAL CHI
Total/NA	Analysis	6010B		1	167630	10/27/12 15:52	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167152	10/24/12 14:54	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-BFZ-37 (0-2) DUP

Lab Sample ID: 500-51609-4

Date Collected: 10/23/12 13:30

Matrix: Solid

Date Received: 10/23/12 16:10

Percent Solids: 92.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167349	10/25/12 18:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 01:58	TDS	TAL CHI
Total/NA	Analysis	6010B		1	167630	10/27/12 15:56	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167152	10/24/12 14:54	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-BFZ-38 (0-2)

Lab Sample ID: 500-51609-5

Date Collected: 10/23/12 13:30

Matrix: Solid

Date Received: 10/23/12 16:10

Percent Solids: 83.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167349	10/25/12 18:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 02:02	TDS	TAL CHI
Total/NA	Analysis	6010B		1	167630	10/27/12 16:00	TDS	TAL CHI

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51609-1

**Client Sample ID: ECH-S-IRM1-BFZ-38 (0-2)**

**Lab Sample ID: 500-51609-5**

Date Collected: 10/23/12 13:30

Matrix: Solid

Date Received: 10/23/12 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	167152	10/24/12 14:54	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-BFZ-39 (0-2)**

**Lab Sample ID: 500-51609-6**

Date Collected: 10/23/12 14:40

Matrix: Solid

Date Received: 10/23/12 16:10

Percent Solids: 82.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167349	10/25/12 18:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 02:32	TDS	TAL CHI
Total/NA	Analysis	6010B		1	167630	10/27/12 16:29	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167152	10/24/12 14:54	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-BFZ-40 (0-2)**

**Lab Sample ID: 500-51609-7**

Date Collected: 10/23/12 13:45

Matrix: Solid

Date Received: 10/23/12 16:10

Percent Solids: 66.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167349	10/25/12 18:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 02:36	TDS	TAL CHI
Total/NA	Analysis	6010B		1	167630	10/27/12 16:33	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167152	10/24/12 14:54	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51609-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-12
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13



Chicago  
2417 Bond Street

### Chain of Custody Record



University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

TestAmerica Laboratories,

<b>Client Contact</b> Wanda Davis - URS Corp. ADQM Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300 Newark, DE 19713 (302) 781-5892 (302) 781-5901 Fax Project Name: IRM Sampling Site Location: DuPont East Chicago, Indiana PO#: LBIO-66421, Client Project#: 9267-7720100C-WHO6507754	<b>Project Manager: Randy Palachek</b> Tel/Fax: 512.719.6006	<b>Site Contact: Keith Thompson</b> Date: 10/23/12	<b>Lab Contact: Richard Wright</b> Carrier: TA Courier	<b>COC No:</b> 1 of 1 COCs
<b>Analysis Turnaround Time</b> Calendar (C) or Work Days (W) TAT if different from below <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day				<b>Job No.</b> 500-51609
				<b>SDG No.</b>

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	Total Metals (As, Cd, Pb, Zn)	Sample Specific Note
1 ECH-S-IRM1-BFZ-32 (0-2)	10/23/2012	1315	Composite	SOIL	1	N X		
2 ECH-S-IRM1-BFZ-33 (0-2)	10/23/2012	1320	Composite	SOIL	1	N X		
3 ECH-S-IRM1-BFZ-37 (0-2)	10/23/2012	1325	Composite	SOIL	1	N X		
4 ECH-S-IRM1-BFZ-37 (0-2) DUP	10/23/2012	1330	Composite	SOIL	3	N X		
5 ECH-S-IRM1-BFZ-38 (0-2)	10/23/2012	1330	Composite	SOIL	1	N X		extra volume for MS/M
6 ECH-S-IRM1-BFZ-39 (0-2)	10/23/2012	1440	Composite	SOIL	1	N X		
7 ECH-S-IRM1-BFZ-40 (0-2)	10/23/2012	1345	Composite	SOIL	1	N X		

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification  
 Non-Hazard     Flammable     Skin Irritant     Poison B     Unknown

Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client     Disposal By Lab     Archive For \_\_\_\_\_ Months

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company: Parsons	Date/Time: 10/23/12 1500	Received by:	Company: TestAmerica	Date/Time: 10/23/12 1500
Relinquished by:	Company: TestAmerica	Date/Time: 10/23/12 1610	Received by:	Company: TA-CATI	Date/Time: 10/23/12 1610
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-51609-1

**Login Number: 51609**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Lunt, Jeff T**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	3.2
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-51666-1  
Client Project/Site: IRM Sampling

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
11/5/2012 1:42:12 PM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

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*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51666-1

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**Job ID: 500-51666-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-51666-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 10/24/2012 3:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.0° C.

**Metals**

No analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51666-1

## Client Sample ID: ECH-S-IRM1-BFZ-41 (0-2 ft bgs)

Lab Sample ID: 500-51666-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	1.5		0.96	0.21	mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.32		0.19	0.048	mg/Kg	1	☼	6010B	Total/NA
Lead	11	B	0.48	0.17	mg/Kg	1	☼	6010B	Total/NA
Zinc	88		1.9	0.66	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-BFZ-42 (0-2 ft bgs)

Lab Sample ID: 500-51666-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	1.3		1.1	0.24	mg/Kg	1	☼	6010B	Total/NA
Cadmium	3.0		0.22	0.055	mg/Kg	1	☼	6010B	Total/NA
Lead	32		0.56	0.19	mg/Kg	1	☼	6010B	Total/NA
Zinc	270		2.2	0.77	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-BFZ-44 (0-2 ft bgs)

Lab Sample ID: 500-51666-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	65		2.1	0.47	mg/Kg	1	☼	6010B	Total/NA
Cadmium	25		0.43	0.11	mg/Kg	1	☼	6010B	Total/NA
Lead	1000	B	1.1	0.37	mg/Kg	1	☼	6010B	Total/NA
Zinc	9300		43	15	mg/Kg	10	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-BFZ-45 (0-2 ft bgs)

Lab Sample ID: 500-51666-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	7.1		1.6	0.34	mg/Kg	1	☼	6010B	Total/NA
Cadmium	7.1		0.31	0.078	mg/Kg	1	☼	6010B	Total/NA
Lead	54	B	0.79	0.27	mg/Kg	1	☼	6010B	Total/NA
Zinc	1300		3.1	1.1	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-BFZ-46 (0-2 ft bgs)

Lab Sample ID: 500-51666-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	14		1.1	0.24	mg/Kg	1	☼	6010B	Total/NA
Cadmium	5.7		0.22	0.055	mg/Kg	1	☼	6010B	Total/NA
Lead	120	B	0.56	0.19	mg/Kg	1	☼	6010B	Total/NA
Zinc	1600		2.2	0.77	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-BFZ-47 (0-2 ft bgs)

Lab Sample ID: 500-51666-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.9		2.2	0.47	mg/Kg	1	☼	6010B	Total/NA
Cadmium	2.1		0.43	0.11	mg/Kg	1	☼	6010B	Total/NA
Lead	85	B	1.1	0.37	mg/Kg	1	☼	6010B	Total/NA
Zinc	810		4.3	1.5	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-BFZ-48 (0-2 ft bgs)

Lab Sample ID: 500-51666-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	16		1.6	0.34	mg/Kg	1	☼	6010B	Total/NA
Cadmium	18		0.31	0.078	mg/Kg	1	☼	6010B	Total/NA
Lead	610	B	0.78	0.27	mg/Kg	1	☼	6010B	Total/NA
Zinc	1700		3.1	1.1	mg/Kg	1	☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51666-1

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Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

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**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51666-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-51666-1	ECH-S-IRM1-BFZ-41 (0-2 ft bgs)	Solid	10/24/12 13:30	10/24/12 15:05
500-51666-2	ECH-S-IRM1-BFZ-42 (0-2 ft bgs)	Solid	10/24/12 13:35	10/24/12 15:05
500-51666-3	ECH-S-IRM1-BFZ-44 (0-2 ft bgs)	Solid	10/24/12 13:40	10/24/12 15:05
500-51666-4	ECH-S-IRM1-BFZ-45 (0-2 ft bgs)	Solid	10/24/12 13:45	10/24/12 15:05
500-51666-5	ECH-S-IRM1-BFZ-46 (0-2 ft bgs)	Solid	10/24/12 13:50	10/24/12 15:05
500-51666-6	ECH-S-IRM1-BFZ-47 (0-2 ft bgs)	Solid	10/24/12 13:55	10/24/12 15:05
500-51666-7	ECH-S-IRM1-BFZ-48 (0-2 ft bgs)	Solid	10/24/12 14:00	10/24/12 15:05



# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51666-1

**Client Sample ID: ECH-S-IRM1-BFZ-41 (0-2 ft bgs)**

**Lab Sample ID: 500-51666-1**

Date Collected: 10/24/12 13:30

Matrix: Solid

Date Received: 10/24/12 15:05

Percent Solids: 92.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5		0.96	0.21	mg/Kg	✱	10/26/12 09:25	10/31/12 01:51	1
Cadmium	0.32		0.19	0.048	mg/Kg	✱	10/26/12 09:25	10/31/12 15:02	1
Lead	11	B	0.48	0.17	mg/Kg	✱	10/26/12 09:25	10/31/12 01:51	1
Zinc	88		1.9	0.66	mg/Kg	✱	10/26/12 09:25	10/31/12 01:51	1

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51666-1

**Client Sample ID: ECH-S-IRM1-BFZ-42 (0-2 ft bgs)**

**Lab Sample ID: 500-51666-2**

Date Collected: 10/24/12 13:35

Matrix: Solid

Date Received: 10/24/12 15:05

Percent Solids: 79.5

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.3		1.1	0.24	mg/Kg	✱	10/26/12 09:25	10/31/12 01:57	1
Cadmium	3.0		0.22	0.055	mg/Kg	✱	10/26/12 09:25	10/31/12 15:06	1
Lead	32		0.56	0.19	mg/Kg	✱	10/26/12 09:25	10/31/12 01:57	1
Zinc	270		2.2	0.77	mg/Kg	✱	10/26/12 09:25	10/31/12 01:57	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51666-1

**Client Sample ID: ECH-S-IRM1-BFZ-44 (0-2 ft bgs)**

**Lab Sample ID: 500-51666-3**

Date Collected: 10/24/12 13:40

Matrix: Solid

Date Received: 10/24/12 15:05

Percent Solids: 44.2

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	65		2.1	0.47	mg/Kg	✱	10/26/12 09:25	10/31/12 02:03	1
Cadmium	25		0.43	0.11	mg/Kg	✱	10/26/12 09:25	10/31/12 15:09	1
Lead	1000	B	1.1	0.37	mg/Kg	✱	10/26/12 09:25	10/31/12 02:03	1
Zinc	9300		43	15	mg/Kg	✱	10/26/12 09:25	10/31/12 15:15	10



# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51666-1

**Client Sample ID: ECH-S-IRM1-BFZ-45 (0-2 ft bgs)**

**Lab Sample ID: 500-51666-4**

Date Collected: 10/24/12 13:45

Matrix: Solid

Date Received: 10/24/12 15:05

Percent Solids: 60.4

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	7.1		1.6	0.34	mg/Kg	✱	10/26/12 09:25	10/31/12 02:10	1
Cadmium	7.1		0.31	0.078	mg/Kg	✱	10/26/12 09:25	10/31/12 15:19	1
Lead	54	B	0.79	0.27	mg/Kg	✱	10/26/12 09:25	10/31/12 02:10	1
Zinc	1300		3.1	1.1	mg/Kg	✱	10/26/12 09:25	10/31/12 02:10	1

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51666-1

**Client Sample ID: ECH-S-IRM1-BFZ-46 (0-2 ft bgs)**

**Lab Sample ID: 500-51666-5**

Date Collected: 10/24/12 13:50

Matrix: Solid

Date Received: 10/24/12 15:05

Percent Solids: 81.9

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	14		1.1	0.24	mg/Kg	✱	10/26/12 09:25	10/31/12 02:16	1
Cadmium	5.7		0.22	0.055	mg/Kg	✱	10/26/12 09:25	10/31/12 15:23	1
Lead	120	B	0.56	0.19	mg/Kg	✱	10/26/12 09:25	10/31/12 02:16	1
Zinc	1600		2.2	0.77	mg/Kg	✱	10/26/12 09:25	10/31/12 02:16	1

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51666-1

**Client Sample ID: ECH-S-IRM1-BFZ-47 (0-2 ft bgs)**

**Lab Sample ID: 500-51666-6**

Date Collected: 10/24/12 13:55

Matrix: Solid

Date Received: 10/24/12 15:05

Percent Solids: 38.4

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.9		2.2	0.47	mg/Kg	✱	10/26/12 09:25	10/31/12 02:23	1
Cadmium	2.1		0.43	0.11	mg/Kg	✱	10/26/12 09:25	10/31/12 15:28	1
Lead	85	B	1.1	0.37	mg/Kg	✱	10/26/12 09:25	10/31/12 02:23	1
Zinc	810		4.3	1.5	mg/Kg	✱	10/26/12 09:25	10/31/12 02:23	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51666-1

**Client Sample ID: ECH-S-IRM1-BFZ-48 (0-2 ft bgs)**

**Lab Sample ID: 500-51666-7**

Date Collected: 10/24/12 14:00

Matrix: Solid

Date Received: 10/24/12 15:05

Percent Solids: 53.1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	16		1.6	0.34	mg/Kg	✱	10/26/12 09:25	10/31/12 02:29	1
Cadmium	18		0.31	0.078	mg/Kg	✱	10/26/12 09:25	10/31/12 15:34	1
Lead	610	B	0.78	0.27	mg/Kg	✱	10/26/12 09:25	10/31/12 02:29	1
Zinc	1700		3.1	1.1	mg/Kg	✱	10/26/12 09:25	10/31/12 02:29	1

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# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51666-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
RER	Relative error ratio
DER	Duplicate error ratio (normalized absolute difference)
DLC	Decision level concentration
RL	Reporting Limit or Requested Limit (Radiochemistry only)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51666-1

## Metals

### Prep Batch: 167390

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51666-1	ECH-S-IRM1-BFZ-41 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51666-2	ECH-S-IRM1-BFZ-42 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51666-3	ECH-S-IRM1-BFZ-44 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51666-4	ECH-S-IRM1-BFZ-45 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51666-5	ECH-S-IRM1-BFZ-46 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51666-6	ECH-S-IRM1-BFZ-47 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51666-7	ECH-S-IRM1-BFZ-48 (0-2 ft bgs)	Total/NA	Solid	3050B	
LCS 500-167390/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-167390/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 167944

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51666-1	ECH-S-IRM1-BFZ-41 (0-2 ft bgs)	Total/NA	Solid	6010B	167390
500-51666-2	ECH-S-IRM1-BFZ-42 (0-2 ft bgs)	Total/NA	Solid	6010B	167390
500-51666-3	ECH-S-IRM1-BFZ-44 (0-2 ft bgs)	Total/NA	Solid	6010B	167390
500-51666-4	ECH-S-IRM1-BFZ-45 (0-2 ft bgs)	Total/NA	Solid	6010B	167390
500-51666-5	ECH-S-IRM1-BFZ-46 (0-2 ft bgs)	Total/NA	Solid	6010B	167390
500-51666-6	ECH-S-IRM1-BFZ-47 (0-2 ft bgs)	Total/NA	Solid	6010B	167390
500-51666-7	ECH-S-IRM1-BFZ-48 (0-2 ft bgs)	Total/NA	Solid	6010B	167390
LCS 500-167390/2-A	Lab Control Sample	Total/NA	Solid	6010B	167390
MB 500-167390/1-A	Method Blank	Total/NA	Solid	6010B	167390

### Analysis Batch: 168106

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51666-1	ECH-S-IRM1-BFZ-41 (0-2 ft bgs)	Total/NA	Solid	6010B	167390
500-51666-2	ECH-S-IRM1-BFZ-42 (0-2 ft bgs)	Total/NA	Solid	6010B	167390
500-51666-3	ECH-S-IRM1-BFZ-44 (0-2 ft bgs)	Total/NA	Solid	6010B	167390
500-51666-3	ECH-S-IRM1-BFZ-44 (0-2 ft bgs)	Total/NA	Solid	6010B	167390
500-51666-4	ECH-S-IRM1-BFZ-45 (0-2 ft bgs)	Total/NA	Solid	6010B	167390
500-51666-5	ECH-S-IRM1-BFZ-46 (0-2 ft bgs)	Total/NA	Solid	6010B	167390
500-51666-6	ECH-S-IRM1-BFZ-47 (0-2 ft bgs)	Total/NA	Solid	6010B	167390
500-51666-7	ECH-S-IRM1-BFZ-48 (0-2 ft bgs)	Total/NA	Solid	6010B	167390
LCS 500-167390/2-A	Lab Control Sample	Total/NA	Solid	6010B	167390
MB 500-167390/1-A	Method Blank	Total/NA	Solid	6010B	167390

## General Chemistry

### Analysis Batch: 167291

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51666-1	ECH-S-IRM1-BFZ-41 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51666-2	ECH-S-IRM1-BFZ-42 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51666-3	ECH-S-IRM1-BFZ-44 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51666-4	ECH-S-IRM1-BFZ-45 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51666-5	ECH-S-IRM1-BFZ-46 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51666-6	ECH-S-IRM1-BFZ-47 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51666-7	ECH-S-IRM1-BFZ-48 (0-2 ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51666-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-167390/1-A**  
**Matrix: Solid**  
**Analysis Batch: 167944**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 167390**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		10/26/12 09:25	10/31/12 01:38	1
Lead	0.238	J	0.50	0.17	mg/Kg		10/26/12 09:25	10/31/12 01:38	1
Zinc	ND		2.0	0.69	mg/Kg		10/26/12 09:25	10/31/12 01:38	1

**Lab Sample ID: MB 500-167390/1-A**  
**Matrix: Solid**  
**Analysis Batch: 168106**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 167390**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		0.20	0.050	mg/Kg		10/26/12 09:25	10/31/12 14:53	1

**Lab Sample ID: LCS 500-167390/2-A**  
**Matrix: Solid**  
**Analysis Batch: 167944**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 167390**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	8.83		mg/Kg		88	80 - 120
Lead	10.0	9.84		mg/Kg		98	80 - 120
Zinc	50.0	46.9		mg/Kg		94	80 - 120

**Lab Sample ID: LCS 500-167390/2-A**  
**Matrix: Solid**  
**Analysis Batch: 168106**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 167390**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	5.00	4.66		mg/Kg		93	80 - 120

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51666-1

## Client Sample ID: ECH-S-IRM1-BFZ-41 (0-2 ft bgs)

Lab Sample ID: 500-51666-1

Date Collected: 10/24/12 13:30

Matrix: Solid

Date Received: 10/24/12 15:05

Percent Solids: 92.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167390	10/26/12 09:25	LAH	TAL CHI
Total/NA	Analysis	6010B		1	167944	10/31/12 01:51	PJ	TAL CHI
Total/NA	Analysis	6010B		1	168106	10/31/12 15:02	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167291	10/25/12 12:58	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-BFZ-42 (0-2 ft bgs)

Lab Sample ID: 500-51666-2

Date Collected: 10/24/12 13:35

Matrix: Solid

Date Received: 10/24/12 15:05

Percent Solids: 79.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167390	10/26/12 09:25	LAH	TAL CHI
Total/NA	Analysis	6010B		1	167944	10/31/12 01:57	PJ	TAL CHI
Total/NA	Analysis	6010B		1	168106	10/31/12 15:06	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167291	10/25/12 12:58	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-BFZ-44 (0-2 ft bgs)

Lab Sample ID: 500-51666-3

Date Collected: 10/24/12 13:40

Matrix: Solid

Date Received: 10/24/12 15:05

Percent Solids: 44.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167390	10/26/12 09:25	LAH	TAL CHI
Total/NA	Analysis	6010B		1	167944	10/31/12 02:03	PJ	TAL CHI
Total/NA	Analysis	6010B		1	168106	10/31/12 15:09	TDS	TAL CHI
Total/NA	Analysis	6010B		10	168106	10/31/12 15:15	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167291	10/25/12 12:58	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-BFZ-45 (0-2 ft bgs)

Lab Sample ID: 500-51666-4

Date Collected: 10/24/12 13:45

Matrix: Solid

Date Received: 10/24/12 15:05

Percent Solids: 60.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167390	10/26/12 09:25	LAH	TAL CHI
Total/NA	Analysis	6010B		1	167944	10/31/12 02:10	PJ	TAL CHI
Total/NA	Analysis	6010B		1	168106	10/31/12 15:19	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167291	10/25/12 12:58	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-BFZ-46 (0-2 ft bgs)

Lab Sample ID: 500-51666-5

Date Collected: 10/24/12 13:50

Matrix: Solid

Date Received: 10/24/12 15:05

Percent Solids: 81.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167390	10/26/12 09:25	LAH	TAL CHI
Total/NA	Analysis	6010B		1	167944	10/31/12 02:16	PJ	TAL CHI

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51666-1

**Client Sample ID: ECH-S-IRM1-BFZ-46 (0-2 ft bgs)**

**Lab Sample ID: 500-51666-5**

Date Collected: 10/24/12 13:50

Matrix: Solid

Date Received: 10/24/12 15:05

Percent Solids: 81.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	6010B		1	168106	10/31/12 15:23	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167291	10/25/12 12:58	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-BFZ-47 (0-2 ft bgs)**

**Lab Sample ID: 500-51666-6**

Date Collected: 10/24/12 13:55

Matrix: Solid

Date Received: 10/24/12 15:05

Percent Solids: 38.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167390	10/26/12 09:25	LAH	TAL CHI
Total/NA	Analysis	6010B		1	167944	10/31/12 02:23	PJ	TAL CHI
Total/NA	Analysis	6010B		1	168106	10/31/12 15:28	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167291	10/25/12 12:58	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-BFZ-48 (0-2 ft bgs)**

**Lab Sample ID: 500-51666-7**

Date Collected: 10/24/12 14:00

Matrix: Solid

Date Received: 10/24/12 15:05

Percent Solids: 53.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167390	10/26/12 09:25	LAH	TAL CHI
Total/NA	Analysis	6010B		1	167944	10/31/12 02:29	PJ	TAL CHI
Total/NA	Analysis	6010B		1	168106	10/31/12 15:34	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167291	10/25/12 12:58	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51666-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13



Chicago  
2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

### Chain of Custody Record



TestAmerica Laboratories,

Client Contact		Project Manager: Randy Palachek		Site Contact: Keith Thompson		Date: 10/24/12		COC No: 500-51606	
Wanda Davis - URS Corp. ADQM		Tel/Fax: 512.719.6006		Lab Contact: Richard Wright		Carrier: TA Courier		1 of 1 COCs	
Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300		Analysis Turnaround Time		Filtered Sample Total Metals (As, Cd, Pb, Zn)				Job No.	
Newark, DE 19713		Calendar (C) or Work Days (W)							
(302) 781-5892		TAT if different from Below _____							
(302) 781-5901 Fax		<input checked="" type="checkbox"/> 2 weeks							
Project Name: IRM Sampling		<input type="checkbox"/> 1 week							
Site Location: DuPont East Chicago, Indiana		<input type="checkbox"/> 2 days						SDG No.	
PO#: LBIO-66421, Client Project#: 9267-7720100C-WHO6507754		<input type="checkbox"/> 1 day							
Sample Identification		Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Sample Specific Note:		
ECH-S-IRM1-BFZ-41 (0-2 ft bgs)		10/24/2012	1330	Composite	SOIL	1	N	X	
ECH-S-IRM1-BFZ-42 (0-2 ft bgs)		10/24/2012	1335	Composite	SOIL	1	N	X	
ECH-S-IRM1-BFZ-44 (0-2 ft bgs)		10/24/2012	1340	Composite	SOIL	1	N	X	
ECH-S-IRM1-BFZ-45 (0-2 ft bgs)		10/24/2012	1345	Composite	SOIL	1	N	X	
ECH-S-IRM1-BFZ-46 (0-2 ft bgs)		10/24/2012	1350	Composite	SOIL	1	N	X	
ECH-S-IRM1-BFZ-47 (0-2 ft bgs)		10/24/2012	1355	Composite	SOIL	1	N	X	
ECH-S-IRM1-BFZ-48 (0-2 ft bgs)		10/24/2012	1400	Composite	SOIL	1	N	X	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other		Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
<input checked="" type="checkbox"/> Non-Hazard		<input type="checkbox"/> Flammable		<input type="checkbox"/> Skin Irritant		<input type="checkbox"/> Poison B		<input type="checkbox"/> Unknown	
						<input type="checkbox"/> Return To Client		<input checked="" type="checkbox"/> Disposal By Lab	
								<input type="checkbox"/> Archive For _____ Months	
Special Instructions/QC Requirements & Comments:									
Relinquished by: <i>[Signature]</i>		Company: <i>Person</i>		Date/Time: <i>10/24/12 1500</i>		Received by: <i>[Signature]</i>		Company: <i>TA</i>	
Relinquished by: <i>[Signature]</i>		Company: <i>AS</i>		Date/Time: <i>10/24/12 1505</i>		Received by: <i>[Signature]</i>		Company: <i>TA-CHT</i>	
Relinquished by:		Company:		Date/Time:		Received by:		Company:	

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## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-51666-1

**Login Number: 51666**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Scott, Sherri L**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	5.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-53114-1  
Client Project/Site: IRM Sampling

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
12/12/2012 11:31:05 AM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53114-1

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**Job ID: 500-53114-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative  
500-53114-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 12/10/2012 3:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.5° C.

**Metals**

Method(s) 6010B: The matrix spike (MS) recovery for sample 500-53114-3 was outside control limits for Pb. The associated laboratory control sample (LCS) recovery met acceptance criteria.

Method(s) 6010B: The matrix spike / matrix spike duplicate (MS/MSD) precision for sample 500-53114-3 was outside control limits for Pb. The associated laboratory control sample (LCS) met acceptance criteria.

No other analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53114-1

## Client Sample ID: ECH-S-IRM1-BFZ-34 (0-2)

Lab Sample ID: 500-53114-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.93	J	1.3	0.29	mg/Kg	1	☼	6010B	Total/NA
Cadmium	3.2		0.26	0.065	mg/Kg	1	☼	6010B	Total/NA
Lead	6.6	B	0.66	0.23	mg/Kg	1	☼	6010B	Total/NA
Zinc	120	B	2.6	0.91	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-BFZ-35 (0-2)

Lab Sample ID: 500-53114-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	1.1	J	1.3	0.29	mg/Kg	1	☼	6010B	Total/NA
Cadmium	1.9		0.26	0.065	mg/Kg	1	☼	6010B	Total/NA
Lead	8.3	B	0.66	0.23	mg/Kg	1	☼	6010B	Total/NA
Zinc	120	B	2.6	0.90	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-BFZ-36 (0-2)

Lab Sample ID: 500-53114-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.1		1.0	0.22	mg/Kg	1	☼	6010B	Total/NA
Cadmium	1.4		0.20	0.050	mg/Kg	1	☼	6010B	Total/NA
Lead	9.3	B	0.51	0.17	mg/Kg	1	☼	6010B	Total/NA
Zinc	250	B	2.0	0.70	mg/Kg	1	☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53114-1

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Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

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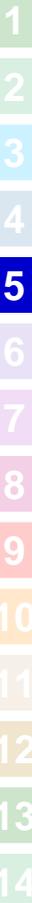
**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53114-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-53114-1	ECH-S-IRM1-BFZ-34 (0-2)	Solid	12/10/12 11:00	12/10/12 15:30
500-53114-2	ECH-S-IRM1-BFZ-35 (0-2)	Solid	12/10/12 11:10	12/10/12 15:30
500-53114-3	ECH-S-IRM1-BFZ-36 (0-2)	Solid	12/10/12 11:20	12/10/12 15:30

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-53114-1

**Client Sample ID: ECH-S-IRM1-BFZ-34 (0-2)**

**Lab Sample ID: 500-53114-1**

Date Collected: 12/10/12 11:00

Matrix: Solid

Date Received: 12/10/12 15:30

Percent Solids: 71.7

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.93	J	1.3	0.29	mg/Kg	✱	12/11/12 07:20	12/11/12 13:36	1
Cadmium	3.2		0.26	0.065	mg/Kg	✱	12/11/12 07:20	12/11/12 13:36	1
Lead	6.6	B	0.66	0.23	mg/Kg	✱	12/11/12 07:20	12/11/12 13:36	1
Zinc	120	B	2.6	0.91	mg/Kg	✱	12/11/12 07:20	12/11/12 13:36	1



# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53114-1

**Client Sample ID: ECH-S-IRM1-BFZ-35 (0-2)**

**Lab Sample ID: 500-53114-2**

**Date Collected: 12/10/12 11:10**

**Matrix: Solid**

**Date Received: 12/10/12 15:30**

**Percent Solids: 73.9**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.1	J	1.3	0.29	mg/Kg	✱	12/11/12 07:20	12/11/12 13:42	1
Cadmium	1.9		0.26	0.065	mg/Kg	✱	12/11/12 07:20	12/11/12 13:42	1
Lead	8.3	B	0.66	0.23	mg/Kg	✱	12/11/12 07:20	12/11/12 13:42	1
Zinc	120	B	2.6	0.90	mg/Kg	✱	12/11/12 07:20	12/11/12 13:42	1

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53114-1

**Client Sample ID: ECH-S-IRM1-BFZ-36 (0-2)**

**Lab Sample ID: 500-53114-3**

Date Collected: 12/10/12 11:20

Matrix: Solid

Date Received: 12/10/12 15:30

Percent Solids: 95.0

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.1		1.0	0.22	mg/Kg	✱	12/11/12 07:20	12/11/12 14:04	1
Cadmium	1.4		0.20	0.050	mg/Kg	✱	12/11/12 07:20	12/11/12 14:04	1
Lead	9.3	B	0.51	0.17	mg/Kg	✱	12/11/12 07:20	12/11/12 14:04	1
Zinc	250	B	2.0	0.70	mg/Kg	✱	12/11/12 07:20	12/11/12 14:04	1

# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53114-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.
F	MS or MSD exceeds the control limits
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
F	RPD of the MS and MSD exceeds the control limits

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53114-1

## Metals

### Prep Batch: 172542

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-53114-1	ECH-S-IRM1-BFZ-34 (0-2)	Total/NA	Solid	3050B	
500-53114-2	ECH-S-IRM1-BFZ-35 (0-2)	Total/NA	Solid	3050B	
500-53114-3	ECH-S-IRM1-BFZ-36 (0-2)	Total/NA	Solid	3050B	
500-53114-3 DU	ECH-S-IRM1-BFZ-36 (0-2)	Total/NA	Solid	3050B	
500-53114-3 MS	ECH-S-IRM1-BFZ-36 (0-2)	Total/NA	Solid	3050B	
500-53114-3 MSD	ECH-S-IRM1-BFZ-36 (0-2)	Total/NA	Solid	3050B	
LCS 500-172542/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-172542/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 172696

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-53114-1	ECH-S-IRM1-BFZ-34 (0-2)	Total/NA	Solid	6010B	172542
500-53114-2	ECH-S-IRM1-BFZ-35 (0-2)	Total/NA	Solid	6010B	172542
500-53114-3	ECH-S-IRM1-BFZ-36 (0-2)	Total/NA	Solid	6010B	172542
500-53114-3 DU	ECH-S-IRM1-BFZ-36 (0-2)	Total/NA	Solid	6010B	172542
500-53114-3 MS	ECH-S-IRM1-BFZ-36 (0-2)	Total/NA	Solid	6010B	172542
500-53114-3 MSD	ECH-S-IRM1-BFZ-36 (0-2)	Total/NA	Solid	6010B	172542
LCS 500-172542/2-A	Lab Control Sample	Total/NA	Solid	6010B	172542
MB 500-172542/1-A	Method Blank	Total/NA	Solid	6010B	172542

## General Chemistry

### Analysis Batch: 172541

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-53114-1	ECH-S-IRM1-BFZ-34 (0-2)	Total/NA	Solid	Moisture	
500-53114-2	ECH-S-IRM1-BFZ-35 (0-2)	Total/NA	Solid	Moisture	
500-53114-3	ECH-S-IRM1-BFZ-36 (0-2)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53114-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-172542/1-A**  
**Matrix: Solid**  
**Analysis Batch: 172696**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 172542**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		12/11/12 07:20	12/11/12 13:24	1
Cadmium	ND		0.20	0.050	mg/Kg		12/11/12 07:20	12/11/12 13:24	1
Lead	0.208	J	0.50	0.17	mg/Kg		12/11/12 07:20	12/11/12 13:24	1
Zinc	0.986	J	2.0	0.69	mg/Kg		12/11/12 07:20	12/11/12 13:24	1

**Lab Sample ID: LCS 500-172542/2-A**  
**Matrix: Solid**  
**Analysis Batch: 172696**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 172542**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.39		mg/Kg		94	80 - 120
Cadmium	5.00	4.85		mg/Kg		97	80 - 120
Lead	10.0	10.0		mg/Kg		100	80 - 120
Zinc	50.0	50.0		mg/Kg		100	80 - 120

**Lab Sample ID: 500-53114-3 MS**  
**Matrix: Solid**  
**Analysis Batch: 172696**

**Client Sample ID: ECH-S-IRM1-BFZ-36 (0-2)**  
**Prep Type: Total/NA**  
**Prep Batch: 172542**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	2.1		9.45	10.9		mg/Kg	☼	94	75 - 125
Cadmium	1.4		4.73	6.28		mg/Kg	☼	102	75 - 125
Lead	9.3	B	9.45	27.0	F	mg/Kg	☼	188	75 - 125
Zinc	250	B	47.3	325	4	mg/Kg	☼	159	75 - 125

**Lab Sample ID: 500-53114-3 MSD**  
**Matrix: Solid**  
**Analysis Batch: 172696**

**Client Sample ID: ECH-S-IRM1-BFZ-36 (0-2)**  
**Prep Type: Total/NA**  
**Prep Batch: 172542**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	2.1		9.11	10.4		mg/Kg	☼	91	75 - 125	5	20
Cadmium	1.4		4.55	5.72		mg/Kg	☼	94	75 - 125	9	20
Lead	9.3	B	9.11	18.8	F	mg/Kg	☼	104	75 - 125	36	20
Zinc	250	B	45.5	277	4	mg/Kg	☼	59	75 - 125	16	20

**Lab Sample ID: 500-53114-3 DU**  
**Matrix: Solid**  
**Analysis Batch: 172696**

**Client Sample ID: ECH-S-IRM1-BFZ-36 (0-2)**  
**Prep Type: Total/NA**  
**Prep Batch: 172542**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	2.1		1.95		mg/Kg	☼	6	20
Cadmium	1.4		1.41		mg/Kg	☼	2	20
Lead	9.3	B	8.88		mg/Kg	☼	4	20
Zinc	250	B	230		mg/Kg	☼	8	20

TestAmerica Chicago

# Lab Chronicle

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-53114-1

**Client Sample ID: ECH-S-IRM1-BFZ-34 (0-2)**

**Lab Sample ID: 500-53114-1**

Date Collected: 12/10/12 11:00

Matrix: Solid

Date Received: 12/10/12 15:30

Percent Solids: 71.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			172542	12/11/12 07:20	LAH	TAL CHI
Total/NA	Analysis	6010B		1	172696	12/11/12 13:36	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	172541	12/11/12 07:39	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-BFZ-35 (0-2)**

**Lab Sample ID: 500-53114-2**

Date Collected: 12/10/12 11:10

Matrix: Solid

Date Received: 12/10/12 15:30

Percent Solids: 73.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			172542	12/11/12 07:20	LAH	TAL CHI
Total/NA	Analysis	6010B		1	172696	12/11/12 13:42	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	172541	12/11/12 07:39	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-BFZ-36 (0-2)**

**Lab Sample ID: 500-53114-3**

Date Collected: 12/10/12 11:20

Matrix: Solid

Date Received: 12/10/12 15:30

Percent Solids: 95.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			172542	12/11/12 07:20	LAH	TAL CHI
Total/NA	Analysis	6010B		1	172696	12/11/12 14:04	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	172541	12/11/12 07:39	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-53114-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13



## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-53114-1

**Login Number: 53114**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Scott, Sherri L**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-53305-1  
Client Project/Site: IRM Sampling

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
12/18/2012 4:01:52 PM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53305-1

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**Job ID: 500-53305-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-53305-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 12/14/2012 3:38 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.0° C.

**Metals**

Method(s) 6010B: The matrix spike (MS) recovery for sample 500-53305-1 was outside control limits for Pb. The associated laboratory control sample (LCS) recovery met acceptance criteria.

No other analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53305-1

## Client Sample ID: ECH-S-IRM1-TS-1 (6-6.5 ft bgs)

Lab Sample ID: 500-53305-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.82	J	1.2	0.27	mg/Kg	1	☼	6010B	Total/NA
Cadmium	29		0.24	0.060	mg/Kg	1	☼	6010B	Total/NA
Lead	19	B	0.61	0.21	mg/Kg	1	☼	6010B	Total/NA
Zinc	1200		2.4	0.84	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-TS-2 (6-6.5 ft bgs)

Lab Sample ID: 500-53305-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	5.8		1.5	0.32	mg/Kg	1	☼	6010B	Total/NA
Cadmium	370		0.29	0.072	mg/Kg	1	☼	6010B	Total/NA
Lead	66	B	0.73	0.25	mg/Kg	1	☼	6010B	Total/NA
Zinc	140		2.9	1.0	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-TS-3 (7-7.5 ft bgs)

Lab Sample ID: 500-53305-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.3		1.4	0.30	mg/Kg	1	☼	6010B	Total/NA
Cadmium	320		0.27	0.067	mg/Kg	1	☼	6010B	Total/NA
Lead	89	B	0.68	0.23	mg/Kg	1	☼	6010B	Total/NA
Zinc	8900		27	9.3	mg/Kg	10	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-TS-4 (7-7.5 ft bgs)

Lab Sample ID: 500-53305-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.2		1.2	0.25	mg/Kg	1	☼	6010B	Total/NA
Cadmium	76		0.23	0.058	mg/Kg	1	☼	6010B	Total/NA
Lead	3.6	B	0.58	0.20	mg/Kg	1	☼	6010B	Total/NA
Zinc	5500		23	8.0	mg/Kg	10	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-TS-5 (7-7.5 ft bgs)

Lab Sample ID: 500-53305-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	1.3		1.3	0.28	mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.072	J	0.26	0.063	mg/Kg	1	☼	6010B	Total/NA
Lead	2.8	B	0.64	0.22	mg/Kg	1	☼	6010B	Total/NA
Zinc	540		2.6	0.88	mg/Kg	1	☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53305-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

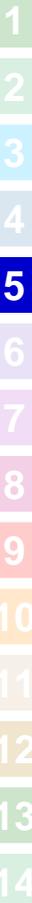
**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

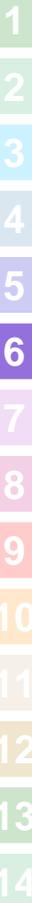


# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53305-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-53305-1	ECH-S-IRM1-TS-1 (6-6.5 ft bgs)	Solid	12/14/12 08:10	12/14/12 15:38
500-53305-2	ECH-S-IRM1-TS-2 (6-6.5 ft bgs)	Solid	12/14/12 08:20	12/14/12 15:38
500-53305-3	ECH-S-IRM1-TS-3 (7-7.5 ft bgs)	Solid	12/14/12 08:30	12/14/12 15:38
500-53305-4	ECH-S-IRM1-TS-4 (7-7.5 ft bgs)	Solid	12/14/12 08:40	12/14/12 15:38
500-53305-5	ECH-S-IRM1-TS-5 (7-7.5 ft bgs)	Solid	12/14/12 08:50	12/14/12 15:38



# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-53305-1

**Client Sample ID: ECH-S-IRM1-TS-1 (6-6.5 ft bgs)**

**Lab Sample ID: 500-53305-1**

**Date Collected: 12/14/12 08:10**

**Matrix: Solid**

**Date Received: 12/14/12 15:38**

**Percent Solids: 79.1**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.82	J	1.2	0.27	mg/Kg	✱	12/17/12 09:27	12/17/12 15:00	1
Cadmium	29		0.24	0.060	mg/Kg	✱	12/17/12 09:27	12/17/12 15:00	1
Lead	19	B	0.61	0.21	mg/Kg	✱	12/17/12 09:27	12/17/12 15:00	1
Zinc	1200		2.4	0.84	mg/Kg	✱	12/17/12 09:27	12/17/12 15:00	1



# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53305-1

**Client Sample ID: ECH-S-IRM1-TS-2 (6-6.5 ft bgs)**

**Lab Sample ID: 500-53305-2**

**Date Collected: 12/14/12 08:20**

**Matrix: Solid**

**Date Received: 12/14/12 15:38**

**Percent Solids: 67.8**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.8		1.5	0.32	mg/Kg	✱	12/17/12 09:27	12/17/12 15:46	1
Cadmium	370		0.29	0.072	mg/Kg	✱	12/17/12 09:27	12/17/12 15:46	1
Lead	66	B	0.73	0.25	mg/Kg	✱	12/17/12 09:27	12/17/12 15:46	1
Zinc	140		2.9	1.0	mg/Kg	✱	12/17/12 09:27	12/17/12 15:46	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-53305-1

**Client Sample ID: ECH-S-IRM1-TS-3 (7-7.5 ft bgs)**

**Lab Sample ID: 500-53305-3**

**Date Collected: 12/14/12 08:30**

**Matrix: Solid**

**Date Received: 12/14/12 15:38**

**Percent Solids: 71.5**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.3		1.4	0.30	mg/Kg	✱	12/17/12 09:27	12/17/12 15:52	1
Cadmium	320		0.27	0.067	mg/Kg	✱	12/17/12 09:27	12/17/12 15:52	1
Lead	89	B	0.68	0.23	mg/Kg	✱	12/17/12 09:27	12/17/12 15:52	1
Zinc	8900		27	9.3	mg/Kg	✱	12/17/12 09:27	12/18/12 10:38	10



# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-53305-1

**Client Sample ID: ECH-S-IRM1-TS-4 (7-7.5 ft bgs)**

**Lab Sample ID: 500-53305-4**

**Date Collected: 12/14/12 08:40**

**Matrix: Solid**

**Date Received: 12/14/12 15:38**

**Percent Solids: 73.0**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.2		1.2	0.25	mg/Kg	✱	12/17/12 09:27	12/17/12 15:58	1
Cadmium	76		0.23	0.058	mg/Kg	✱	12/17/12 09:27	12/17/12 15:58	1
Lead	3.6	B	0.58	0.20	mg/Kg	✱	12/17/12 09:27	12/17/12 15:58	1
Zinc	5500		23	8.0	mg/Kg	✱	12/17/12 09:27	12/18/12 10:42	10



# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-53305-1

**Client Sample ID: ECH-S-IRM1-TS-5 (7-7.5 ft bgs)**

**Lab Sample ID: 500-53305-5**

**Date Collected: 12/14/12 08:50**

**Matrix: Solid**

**Date Received: 12/14/12 15:38**

**Percent Solids: 75.6**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.3		1.3	0.28	mg/Kg	✱	12/17/12 09:27	12/17/12 16:04	1
Cadmium	0.072	J	0.26	0.063	mg/Kg	✱	12/17/12 09:27	12/17/12 16:04	1
Lead	2.8	B	0.64	0.22	mg/Kg	✱	12/17/12 09:27	12/17/12 16:04	1
Zinc	540		2.6	0.88	mg/Kg	✱	12/17/12 09:27	12/17/12 16:04	1



# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53305-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
F	MS or MSD exceeds the control limits

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53305-1

## Metals

### Prep Batch: 173145

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-53305-1	ECH-S-IRM1-TS-1 (6-6.5 ft bgs)	Total/NA	Solid	3050B	
500-53305-1 DU	ECH-S-IRM1-TS-1 (6-6.5 ft bgs)	Total/NA	Solid	3050B	
500-53305-1 MS	ECH-S-IRM1-TS-1 (6-6.5 ft bgs)	Total/NA	Solid	3050B	
500-53305-1 MSD	ECH-S-IRM1-TS-1 (6-6.5 ft bgs)	Total/NA	Solid	3050B	
500-53305-2	ECH-S-IRM1-TS-2 (6-6.5 ft bgs)	Total/NA	Solid	3050B	
500-53305-3	ECH-S-IRM1-TS-3 (7-7.5 ft bgs)	Total/NA	Solid	3050B	
500-53305-4	ECH-S-IRM1-TS-4 (7-7.5 ft bgs)	Total/NA	Solid	3050B	
500-53305-5	ECH-S-IRM1-TS-5 (7-7.5 ft bgs)	Total/NA	Solid	3050B	
LCS 500-173145/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-173145/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 173223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-53305-1	ECH-S-IRM1-TS-1 (6-6.5 ft bgs)	Total/NA	Solid	6010B	173145
500-53305-1 DU	ECH-S-IRM1-TS-1 (6-6.5 ft bgs)	Total/NA	Solid	6010B	173145
500-53305-1 MS	ECH-S-IRM1-TS-1 (6-6.5 ft bgs)	Total/NA	Solid	6010B	173145
500-53305-1 MSD	ECH-S-IRM1-TS-1 (6-6.5 ft bgs)	Total/NA	Solid	6010B	173145
500-53305-2	ECH-S-IRM1-TS-2 (6-6.5 ft bgs)	Total/NA	Solid	6010B	173145
500-53305-3	ECH-S-IRM1-TS-3 (7-7.5 ft bgs)	Total/NA	Solid	6010B	173145
500-53305-4	ECH-S-IRM1-TS-4 (7-7.5 ft bgs)	Total/NA	Solid	6010B	173145
500-53305-5	ECH-S-IRM1-TS-5 (7-7.5 ft bgs)	Total/NA	Solid	6010B	173145
LCS 500-173145/2-A	Lab Control Sample	Total/NA	Solid	6010B	173145
MB 500-173145/1-A	Method Blank	Total/NA	Solid	6010B	173145

### Analysis Batch: 173327

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-53305-3	ECH-S-IRM1-TS-3 (7-7.5 ft bgs)	Total/NA	Solid	6010B	173145
500-53305-4	ECH-S-IRM1-TS-4 (7-7.5 ft bgs)	Total/NA	Solid	6010B	173145

## General Chemistry

### Analysis Batch: 173069

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-53305-1	ECH-S-IRM1-TS-1 (6-6.5 ft bgs)	Total/NA	Solid	Moisture	
500-53305-1 DU	ECH-S-IRM1-TS-1 (6-6.5 ft bgs)	Total/NA	Solid	Moisture	
500-53305-2	ECH-S-IRM1-TS-2 (6-6.5 ft bgs)	Total/NA	Solid	Moisture	
500-53305-3	ECH-S-IRM1-TS-3 (7-7.5 ft bgs)	Total/NA	Solid	Moisture	
500-53305-4	ECH-S-IRM1-TS-4 (7-7.5 ft bgs)	Total/NA	Solid	Moisture	
500-53305-5	ECH-S-IRM1-TS-5 (7-7.5 ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53305-1

## Method: 6010B - Metals (ICP)

Lab Sample ID: MB 500-173145/1-A

Matrix: Solid

Analysis Batch: 173223

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 173145

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		12/17/12 09:27	12/17/12 14:48	1
Cadmium	ND		0.20	0.050	mg/Kg		12/17/12 09:27	12/17/12 14:48	1
Lead	0.214	J	0.50	0.17	mg/Kg		12/17/12 09:27	12/17/12 14:48	1
Zinc	ND		2.0	0.69	mg/Kg		12/17/12 09:27	12/17/12 14:48	1

Lab Sample ID: LCS 500-173145/2-A

Matrix: Solid

Analysis Batch: 173223

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 173145

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.40		mg/Kg		94	80 - 120
Cadmium	5.00	4.96		mg/Kg		99	80 - 120
Lead	10.0	10.1		mg/Kg		101	80 - 120
Zinc	50.0	49.8		mg/Kg		100	80 - 120

Lab Sample ID: 500-53305-1 MS

Matrix: Solid

Analysis Batch: 173223

Client Sample ID: ECH-S-IRM1-TS-1 (6-6.5 ft bgs)

Prep Type: Total/NA

Prep Batch: 173145

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.82	J	11.3	11.6		mg/Kg	☼	96	75 - 125
Cadmium	29		5.63	37.9	4	mg/Kg	☼	167	75 - 125
Lead	19	B	11.3	34.4	F	mg/Kg	☼	140	75 - 125
Zinc	1200		56.3	1360	4	mg/Kg	☼	364	75 - 125

Lab Sample ID: 500-53305-1 MSD

Matrix: Solid

Analysis Batch: 173223

Client Sample ID: ECH-S-IRM1-TS-1 (6-6.5 ft bgs)

Prep Type: Total/NA

Prep Batch: 173145

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	0.82	J	12.6	12.9		mg/Kg	☼	96	75 - 125	11	20
Cadmium	29		6.31	35.2	4	mg/Kg	☼	106	75 - 125	7	20
Lead	19	B	12.6	31.9		mg/Kg	☼	105	75 - 125	7	20
Zinc	1200		63.1	1440	4	mg/Kg	☼	444	75 - 125	5	20

Lab Sample ID: 500-53305-1 DU

Matrix: Solid

Analysis Batch: 173223

Client Sample ID: ECH-S-IRM1-TS-1 (6-6.5 ft bgs)

Prep Type: Total/NA

Prep Batch: 173145

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	0.82	J	0.833	J	mg/Kg	☼	2	20
Cadmium	29		32.4		mg/Kg	☼	13	20
Lead	19	B	19.9		mg/Kg	☼	7	20
Zinc	1200		1150		mg/Kg	☼	0.3	20

TestAmerica Chicago

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53305-1

## Client Sample ID: ECH-S-IRM1-TS-1 (6-6.5 ft bgs)

Lab Sample ID: 500-53305-1

Date Collected: 12/14/12 08:10

Matrix: Solid

Date Received: 12/14/12 15:38

Percent Solids: 79.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			173145	12/17/12 09:27	LAH	TAL CHI
Total/NA	Analysis	6010B		1	173223	12/17/12 15:00	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	173069	12/15/12 09:09	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-TS-2 (6-6.5 ft bgs)

Lab Sample ID: 500-53305-2

Date Collected: 12/14/12 08:20

Matrix: Solid

Date Received: 12/14/12 15:38

Percent Solids: 67.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			173145	12/17/12 09:27	LAH	TAL CHI
Total/NA	Analysis	6010B		1	173223	12/17/12 15:46	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	173069	12/15/12 09:09	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-TS-3 (7-7.5 ft bgs)

Lab Sample ID: 500-53305-3

Date Collected: 12/14/12 08:30

Matrix: Solid

Date Received: 12/14/12 15:38

Percent Solids: 71.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			173145	12/17/12 09:27	LAH	TAL CHI
Total/NA	Analysis	6010B		1	173223	12/17/12 15:52	TDS	TAL CHI
Total/NA	Analysis	6010B		10	173327	12/18/12 10:38	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	173069	12/15/12 09:09	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-TS-4 (7-7.5 ft bgs)

Lab Sample ID: 500-53305-4

Date Collected: 12/14/12 08:40

Matrix: Solid

Date Received: 12/14/12 15:38

Percent Solids: 73.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			173145	12/17/12 09:27	LAH	TAL CHI
Total/NA	Analysis	6010B		1	173223	12/17/12 15:58	TDS	TAL CHI
Total/NA	Analysis	6010B		10	173327	12/18/12 10:42	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	173069	12/15/12 09:09	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-TS-5 (7-7.5 ft bgs)

Lab Sample ID: 500-53305-5

Date Collected: 12/14/12 08:50

Matrix: Solid

Date Received: 12/14/12 15:38

Percent Solids: 75.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			173145	12/17/12 09:27	LAH	TAL CHI
Total/NA	Analysis	6010B		1	173223	12/17/12 16:04	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	173069	12/15/12 09:09	CMV	TAL CHI

TestAmerica Chicago

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53305-1

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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# Certification Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53305-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13



## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-53305-1

**Login Number: 53305**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Scott, Sherri L**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-50579-1  
Client Project/Site: East Chicago  
Revision: 1

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
12/21/2012 9:01:19 AM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
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Have a Question?



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*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

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**Job ID: 500-50579-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-50579-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 9/27/2012 7:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.0° C.

**Revised Report**

Sample ID changes made by Parsons - see amended COCs.

**Metals**

Method(s) 6010B: The CCB at line 52 in AD batch 164086 contained Pb above the RL. All associated samples were 10x for Pb and have been reported.

Method(s) 6010B: The matrix spike / matrix spike duplicate (MS/MSD) precision for sample 500-50579-5 was outside control limits for As, Pb, and Zn. The associated laboratory control sample (LCS) met acceptance criteria.

No other analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

## Client Sample ID: ECH-S-IRM1-HW-C2 NORTH WALL (0-2 FT BGS)

Lab Sample ID: 500-50579-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	200		1.2	0.26	mg/Kg	1	☼	6010B	Total/NA
Cadmium	130		0.23	0.058	mg/Kg	1	☼	6010B	Total/NA
Lead	8300		29	10	mg/Kg	50	☼	6010B	Total/NA
Zinc	21000		120	40	mg/Kg	50	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-C2 SOUTH WALL (0-2 FT BGS)

Lab Sample ID: 500-50579-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	42		1.1	0.23	mg/Kg	1	☼	6010B	Total/NA
Cadmium	26		0.21	0.052	mg/Kg	1	☼	6010B	Total/NA
Lead	2900	^	0.53	0.18	mg/Kg	1	☼	6010B	Total/NA
Zinc	12000		110	36	mg/Kg	50	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-C2 EAST WALL (0-2 FT BGS)

Lab Sample ID: 500-50579-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	60		1.1	0.23	mg/Kg	1	☼	6010B	Total/NA
Cadmium	320		0.21	0.052	mg/Kg	1	☼	6010B	Total/NA
Lead	2800	^	0.53	0.18	mg/Kg	1	☼	6010B	Total/NA
Zinc	20000		110	36	mg/Kg	50	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-C2 WEST WALL (0-2 FT BGS)

Lab Sample ID: 500-50579-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	290		1.2	0.27	mg/Kg	1	☼	6010B	Total/NA
Cadmium	150		0.25	0.061	mg/Kg	1	☼	6010B	Total/NA
Lead	16000		31	11	mg/Kg	50	☼	6010B	Total/NA
Zinc	41000		120	42	mg/Kg	50	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)

Lab Sample ID: 500-50579-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	410		1.2	0.27	mg/Kg	1	☼	6010B	Total/NA
Cadmium	170		0.25	0.062	mg/Kg	1	☼	6010B	Total/NA
Lead	17000		31	11	mg/Kg	50	☼	6010B	Total/NA
Zinc	37000		120	43	mg/Kg	50	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D1 NORTH WALL (0-2 FT BGS)

Lab Sample ID: 500-50579-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	110		1.0	0.22	mg/Kg	1	☼	6010B	Total/NA
Cadmium	7.8		0.20	0.050	mg/Kg	1	☼	6010B	Total/NA
Lead	20000		50	17	mg/Kg	100	☼	6010B	Total/NA
Zinc	8200		200	69	mg/Kg	100	☼	6010B	Total/NA

TestAmerica Chicago

# Detection Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

## Client Sample ID: ECH-S-IRM1-HW-D1 SOUTH WALL (0-2 FT BGS)

Lab Sample ID: 500-50579-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	590		1.1	0.24	mg/Kg	1	☼	6010B	Total/NA
Cadmium	13		0.22	0.054	mg/Kg	1	☼	6010B	Total/NA
Lead	22000		54	19	mg/Kg	100	☼	6010B	Total/NA
Zinc	11000		220	74	mg/Kg	100	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D1 EAST WALL (0-2 FT BGS)

Lab Sample ID: 500-50579-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	300		1.0	0.22	mg/Kg	1	☼	6010B	Total/NA
Cadmium	7.9		0.20	0.050	mg/Kg	1	☼	6010B	Total/NA
Lead	15000		25	8.6	mg/Kg	50	☼	6010B	Total/NA
Zinc	12000		100	34	mg/Kg	50	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D1 WEST WALL (0-2 FT BGS)

Lab Sample ID: 500-50579-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	42		1.0	0.22	mg/Kg	1	☼	6010B	Total/NA
Cadmium	3.5		0.20	0.050	mg/Kg	1	☼	6010B	Total/NA
Lead	2300 ^		0.51	0.17	mg/Kg	1	☼	6010B	Total/NA
Zinc	1800		2.0	0.70	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D1 FLOOR (2 FT BGS)

Lab Sample ID: 500-50579-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	350		1.2	0.25	mg/Kg	1	☼	6010B	Total/NA
Cadmium	8.7		0.23	0.058	mg/Kg	1	☼	6010B	Total/NA
Lead	22000		58	20	mg/Kg	100	☼	6010B	Total/NA
Zinc	9600		230	80	mg/Kg	100	☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

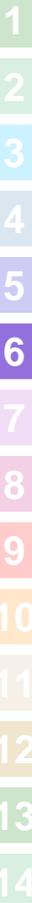
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# Sample Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-50579-1	ECH-S-IRM1-HW-C2 NORTH WALL (0-2 FT BGS)	Solid	09/26/12 09:30	09/27/12 07:00
500-50579-2	ECH-S-IRM1-HW-C2 SOUTH WALL (0-2 FT BGS)	Solid	09/26/12 09:30	09/27/12 07:00
500-50579-3	ECH-S-IRM1-HW-C2 EAST WALL (0-2 FT BGS)	Solid	09/26/12 09:30	09/27/12 07:00
500-50579-4	ECH-S-IRM1-HW-C2 WEST WALL (0-2 FT BGS)	Solid	09/26/12 09:30	09/27/12 07:00
500-50579-5	ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)	Solid	09/26/12 09:30	09/27/12 07:00
500-50579-6	ECH-S-IRM1-HW-D1 NORTH WALL (0-2 FT BGS)	Solid	09/26/12 14:50	09/27/12 07:00
500-50579-7	ECH-S-IRM1-HW-D1 SOUTH WALL (0-2 FT BGS)	Solid	09/26/12 14:50	09/27/12 07:00
500-50579-8	ECH-S-IRM1-HW-D1 EAST WALL (0-2 FT BGS)	Solid	09/26/12 14:50	09/27/12 07:00
500-50579-9	ECH-S-IRM1-HW-D1 WEST WALL (0-2 FT BGS)	Solid	09/26/12 14:50	09/27/12 07:00
500-50579-10	ECH-S-IRM1-HW-D1 FLOOR (2 FT BGS)	Solid	09/26/12 14:50	09/27/12 07:00



# Client Sample Results

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

**Client Sample ID: ECH-S-IRM1-HW-C2 NORTH WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50579-1**

Date Collected: 09/26/12 09:30

Matrix: Solid

Date Received: 09/27/12 07:00

Percent Solids: 85.2

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	200		1.2	0.26	mg/Kg	☼	09/27/12 08:49	09/27/12 19:39	1
Cadmium	130		0.23	0.058	mg/Kg	☼	09/27/12 08:49	09/27/12 19:39	1
Lead	8300		29	10	mg/Kg	☼	09/27/12 08:49	09/28/12 10:27	50
Zinc	21000		120	40	mg/Kg	☼	09/27/12 08:49	09/28/12 10:27	50

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# Client Sample Results

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

**Client Sample ID: ECH-S-IRM1-HW-C2 SOUTH WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50579-2**

Date Collected: 09/26/12 09:30

Matrix: Solid

Date Received: 09/27/12 07:00

Percent Solids: 91.0

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	42		1.1	0.23	mg/Kg	☼	09/27/12 08:49	09/27/12 19:45	1
Cadmium	26		0.21	0.052	mg/Kg	☼	09/27/12 08:49	09/27/12 19:45	1
Lead	2900	^	0.53	0.18	mg/Kg	☼	09/27/12 08:49	09/27/12 19:45	1
Zinc	12000		110	36	mg/Kg	☼	09/27/12 08:49	09/28/12 10:31	50



# Client Sample Results

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

**Client Sample ID: ECH-S-IRM1-HW-C2 EAST WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50579-3**

Date Collected: 09/26/12 09:30

Matrix: Solid

Date Received: 09/27/12 07:00

Percent Solids: 86.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	60		1.1	0.23	mg/Kg	☼	09/27/12 08:49	09/27/12 19:51	1
Cadmium	320		0.21	0.052	mg/Kg	☼	09/27/12 08:49	09/27/12 19:51	1
Lead	2800	^	0.53	0.18	mg/Kg	☼	09/27/12 08:49	09/27/12 19:51	1
Zinc	20000		110	36	mg/Kg	☼	09/27/12 08:49	09/28/12 10:35	50



# Client Sample Results

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

**Client Sample ID: ECH-S-IRM1-HW-C2 WEST WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50579-4**

Date Collected: 09/26/12 09:30

Matrix: Solid

Date Received: 09/27/12 07:00

Percent Solids: 80.9

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	290		1.2	0.27	mg/Kg	☼	09/27/12 08:49	09/27/12 19:57	1
Cadmium	150		0.25	0.061	mg/Kg	☼	09/27/12 08:49	09/27/12 19:57	1
Lead	16000		31	11	mg/Kg	☼	09/27/12 08:49	09/28/12 10:39	50
Zinc	41000		120	42	mg/Kg	☼	09/27/12 08:49	09/28/12 10:39	50



# Client Sample Results

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

**Client Sample ID: ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)**

**Lab Sample ID: 500-50579-5**

Date Collected: 09/26/12 09:30

Matrix: Solid

Date Received: 09/27/12 07:00

Percent Solids: 75.2

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	410		1.2	0.27	mg/Kg	☆	09/27/12 08:49	09/27/12 20:03	1
Cadmium	170		0.25	0.062	mg/Kg	☆	09/27/12 08:49	09/27/12 20:03	1
Lead	17000		31	11	mg/Kg	☆	09/27/12 08:49	09/28/12 10:43	50
Zinc	37000		120	43	mg/Kg	☆	09/27/12 08:49	09/28/12 10:43	50

# Client Sample Results

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

**Client Sample ID: ECH-S-IRM1-HW-D1 NORTH WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50579-6**

**Date Collected: 09/26/12 14:50**

**Matrix: Solid**

**Date Received: 09/27/12 07:00**

**Percent Solids: 87.7**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	110		1.0	0.22	mg/Kg	☼	09/27/12 08:49	09/27/12 20:51	1
Cadmium	7.8		0.20	0.050	mg/Kg	☼	09/27/12 08:49	09/27/12 20:51	1
Lead	20000		50	17	mg/Kg	☼	09/27/12 08:49	09/28/12 11:12	100
Zinc	8200		200	69	mg/Kg	☼	09/27/12 08:49	09/28/12 11:12	100

# Client Sample Results

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

**Client Sample ID: ECH-S-IRM1-HW-D1 SOUTH WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50579-7**

Date Collected: 09/26/12 14:50

Matrix: Solid

Date Received: 09/27/12 07:00

Percent Solids: 82.9

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	590		1.1	0.24	mg/Kg	☼	09/27/12 08:49	09/27/12 20:57	1
Cadmium	13		0.22	0.054	mg/Kg	☼	09/27/12 08:49	09/27/12 20:57	1
Lead	22000		54	19	mg/Kg	☼	09/27/12 08:49	09/28/12 11:16	100
Zinc	11000		220	74	mg/Kg	☼	09/27/12 08:49	09/28/12 11:16	100



# Client Sample Results

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

**Client Sample ID: ECH-S-IRM1-HW-D1 EAST WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50579-8**

Date Collected: 09/26/12 14:50

Matrix: Solid

Date Received: 09/27/12 07:00

Percent Solids: 85.5

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	300		1.0	0.22	mg/Kg	☼	09/27/12 08:49	09/27/12 21:04	1
Cadmium	7.9		0.20	0.050	mg/Kg	☼	09/27/12 08:49	09/27/12 21:04	1
Lead	15000		25	8.6	mg/Kg	☼	09/27/12 08:49	09/28/12 11:20	50
Zinc	12000		100	34	mg/Kg	☼	09/27/12 08:49	09/28/12 11:20	50



# Client Sample Results

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

**Client Sample ID: ECH-S-IRM1-HW-D1 WEST WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50579-9**

Date Collected: 09/26/12 14:50

Matrix: Solid

Date Received: 09/27/12 07:00

Percent Solids: 93.8

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	42		1.0	0.22	mg/Kg	☼	09/27/12 08:49	09/27/12 21:10	1
Cadmium	3.5		0.20	0.050	mg/Kg	☼	09/27/12 08:49	09/27/12 21:10	1
Lead	2300	^	0.51	0.17	mg/Kg	☼	09/27/12 08:49	09/27/12 21:10	1
Zinc	1800		2.0	0.70	mg/Kg	☼	09/27/12 08:49	09/27/12 21:10	1



# Client Sample Results

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

**Client Sample ID: ECH-S-IRM1-HW-D1 FLOOR (2 FT BGS)**

**Lab Sample ID: 500-50579-10**

Date Collected: 09/26/12 14:50

Matrix: Solid

Date Received: 09/27/12 07:00

Percent Solids: 82.1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	350		1.2	0.25	mg/Kg	✱	09/27/12 08:49	09/27/12 21:16	1
Cadmium	8.7		0.23	0.058	mg/Kg	✱	09/27/12 08:49	09/27/12 21:16	1
Lead	22000		58	20	mg/Kg	✱	09/27/12 08:49	09/28/12 11:24	100
Zinc	9600		230	80	mg/Kg	✱	09/27/12 08:49	09/28/12 11:24	100

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# Definitions/Glossary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC exceeds the control limits.
F	Duplicate RPD exceeds the control limit
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
F	RPD of the MS and MSD exceeds the control limits

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

## Metals

### Prep Batch: 163955

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50579-1	ECH-S-IRM1-HW-C2 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50579-2	ECH-S-IRM1-HW-C2 SOUTH WALL (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50579-3	ECH-S-IRM1-HW-C2 EAST WALL (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50579-4	ECH-S-IRM1-HW-C2 WEST WALL (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50579-5	ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	3050B	
500-50579-5 DU	ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	3050B	
500-50579-5 MS	ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	3050B	
500-50579-5 MSD	ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	3050B	
500-50579-6	ECH-S-IRM1-HW-D1 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50579-7	ECH-S-IRM1-HW-D1 SOUTH WALL (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50579-8	ECH-S-IRM1-HW-D1 EAST WALL (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50579-9	ECH-S-IRM1-HW-D1 WEST WALL (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50579-10	ECH-S-IRM1-HW-D1 FLOOR (2 FT BGS)	Total/NA	Solid	3050B	
LCS 500-163955/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-163955/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 164086

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50579-1	ECH-S-IRM1-HW-C2 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-2	ECH-S-IRM1-HW-C2 SOUTH WALL (0-2 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-3	ECH-S-IRM1-HW-C2 EAST WALL (0-2 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-4	ECH-S-IRM1-HW-C2 WEST WALL (0-2 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-5	ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-5 DU	ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-5 MS	ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-5 MSD	ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-6	ECH-S-IRM1-HW-D1 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-7	ECH-S-IRM1-HW-D1 SOUTH WALL (0-2 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-8	ECH-S-IRM1-HW-D1 EAST WALL (0-2 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-9	ECH-S-IRM1-HW-D1 WEST WALL (0-2 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-10	ECH-S-IRM1-HW-D1 FLOOR (2 FT BGS)	Total/NA	Solid	6010B	163955
LCS 500-163955/2-A	Lab Control Sample	Total/NA	Solid	6010B	163955
MB 500-163955/1-A	Method Blank	Total/NA	Solid	6010B	163955

### Analysis Batch: 164173

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50579-1	ECH-S-IRM1-HW-C2 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-2	ECH-S-IRM1-HW-C2 SOUTH WALL (0-2 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-3	ECH-S-IRM1-HW-C2 EAST WALL (0-2 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-4	ECH-S-IRM1-HW-C2 WEST WALL (0-2 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-5	ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-5 DU	ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-5 MS	ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-5 MSD	ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-6	ECH-S-IRM1-HW-D1 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-7	ECH-S-IRM1-HW-D1 SOUTH WALL (0-2 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-8	ECH-S-IRM1-HW-D1 EAST WALL (0-2 FT BGS)	Total/NA	Solid	6010B	163955
500-50579-10	ECH-S-IRM1-HW-D1 FLOOR (2 FT BGS)	Total/NA	Solid	6010B	163955

# QC Association Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

## General Chemistry

### Analysis Batch: 163969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50579-1	ECH-S-IRM1-HW-C2 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50579-1 DU	ECH-S-IRM1-HW-C2 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50579-2	ECH-S-IRM1-HW-C2 SOUTH WALL (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50579-3	ECH-S-IRM1-HW-C2 EAST WALL (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50579-4	ECH-S-IRM1-HW-C2 WEST WALL (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50579-5	ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	Moisture	
500-50579-6	ECH-S-IRM1-HW-D1 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50579-7	ECH-S-IRM1-HW-D1 SOUTH WALL (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50579-8	ECH-S-IRM1-HW-D1 EAST WALL (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50579-9	ECH-S-IRM1-HW-D1 WEST WALL (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50579-10	ECH-S-IRM1-HW-D1 FLOOR (2 FT BGS)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-163955/1-A**  
**Matrix: Solid**  
**Analysis Batch: 164086**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 163955**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		09/27/12 08:49	09/27/12 19:14	1
Cadmium	ND		0.20	0.050	mg/Kg		09/27/12 08:49	09/27/12 19:14	1
Lead	ND		0.50	0.17	mg/Kg		09/27/12 08:49	09/27/12 19:14	1
Zinc	ND		2.0	0.69	mg/Kg		09/27/12 08:49	09/27/12 19:14	1

**Lab Sample ID: LCS 500-163955/2-A**  
**Matrix: Solid**  
**Analysis Batch: 164086**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 163955**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.14		mg/Kg		91	80 - 120
Cadmium	5.00	4.83		mg/Kg		97	80 - 120
Lead	10.0	10.5		mg/Kg		105	80 - 120
Zinc	50.0	51.8		mg/Kg		104	80 - 120

**Lab Sample ID: 500-50579-5 MS**  
**Matrix: Solid**  
**Analysis Batch: 164086**

**Client Sample ID: ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)**  
**Prep Type: Total/NA**  
**Prep Batch: 163955**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	410		11.1	323	4	mg/Kg	☼	-788	75 - 125
Cadmium	170		5.56	177	4	mg/Kg	☼	221	75 - 125

**Lab Sample ID: 500-50579-5 MS**  
**Matrix: Solid**  
**Analysis Batch: 164173**

**Client Sample ID: ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)**  
**Prep Type: Total/NA**  
**Prep Batch: 163955**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	17000		11.1	16900	4	mg/Kg	☼	-2237	75 - 125
Zinc	37000		55.6	38900	4	mg/Kg	☼	3379	75 - 125

**Lab Sample ID: 500-50579-5 MSD**  
**Matrix: Solid**  
**Analysis Batch: 164086**

**Client Sample ID: ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)**  
**Prep Type: Total/NA**  
**Prep Batch: 163955**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	410		11.7	250	4 F	mg/Kg	☼	-1377	75 - 125	26	20
Cadmium	170		5.87	145	4	mg/Kg	☼	-345	75 - 125	20	20

**Lab Sample ID: 500-50579-5 MSD**  
**Matrix: Solid**  
**Analysis Batch: 164173**

**Client Sample ID: ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)**  
**Prep Type: Total/NA**  
**Prep Batch: 163955**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	17000		11.7	13400	4 F	mg/Kg	☼	-3209	75 - 125	23	20
Zinc	37000		58.7	27400	4 F	mg/Kg	☼	-1646	75 - 125	35	20

TestAmerica Chicago

# QC Sample Results

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

## Method: 6010B - Metals (ICP) (Continued)

**Lab Sample ID: 500-50579-5 DU**

**Matrix: Solid**

**Analysis Batch: 164086**

**Client Sample ID: ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)**

**Prep Type: Total/NA**

**Prep Batch: 163955**

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Arsenic	410		319	F	mg/Kg	☼	25	20
Cadmium	170		166		mg/Kg	☼	0.4	20

**Lab Sample ID: 500-50579-5 DU**

**Matrix: Solid**

**Analysis Batch: 164173**

**Client Sample ID: ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)**

**Prep Type: Total/NA**

**Prep Batch: 163955**

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Lead	17000		18900		mg/Kg	☼	9	20
Zinc	37000		36500		mg/Kg	☼	2	20

# Lab Chronicle

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

## Client Sample ID: ECH-S-IRM1-HW-C2 NORTH WALL (0-2 FT BGS)

Lab Sample ID: 500-50579-1

Date Collected: 09/26/12 09:30  
Date Received: 09/27/12 07:00

Matrix: Solid  
Percent Solids: 85.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			163955	09/27/12 08:49	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164086	09/27/12 19:39	TDS	TAL CHI
Total/NA	Analysis	6010B		50	164173	09/28/12 10:27	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	163969	09/27/12 09:32	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-C2 SOUTH WALL (0-2 FT BGS)

Lab Sample ID: 500-50579-2

Date Collected: 09/26/12 09:30  
Date Received: 09/27/12 07:00

Matrix: Solid  
Percent Solids: 91.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			163955	09/27/12 08:49	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164086	09/27/12 19:45	TDS	TAL CHI
Total/NA	Analysis	6010B		50	164173	09/28/12 10:31	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	163969	09/27/12 09:32	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-C2 EAST WALL (0-2 FT BGS)

Lab Sample ID: 500-50579-3

Date Collected: 09/26/12 09:30  
Date Received: 09/27/12 07:00

Matrix: Solid  
Percent Solids: 86.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			163955	09/27/12 08:49	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164086	09/27/12 19:51	TDS	TAL CHI
Total/NA	Analysis	6010B		50	164173	09/28/12 10:35	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	163969	09/27/12 09:32	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-C2 WEST WALL (0-2 FT BGS)

Lab Sample ID: 500-50579-4

Date Collected: 09/26/12 09:30  
Date Received: 09/27/12 07:00

Matrix: Solid  
Percent Solids: 80.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			163955	09/27/12 08:49	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164086	09/27/12 19:57	TDS	TAL CHI
Total/NA	Analysis	6010B		50	164173	09/28/12 10:39	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	163969	09/27/12 09:32	CMV	TAL CHI

# Lab Chronicle

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

## Client Sample ID: ECH-S-IRM1-HW-C2 FLOOR (2-2.5 FT BGS)

Lab Sample ID: 500-50579-5

Date Collected: 09/26/12 09:30

Matrix: Solid

Date Received: 09/27/12 07:00

Percent Solids: 75.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			163955	09/27/12 08:49	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164086	09/27/12 20:03	TDS	TAL CHI
Total/NA	Analysis	6010B		50	164173	09/28/12 10:43	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	163969	09/27/12 09:32	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-D1 NORTH WALL (0-2 FT BGS)

Lab Sample ID: 500-50579-6

Date Collected: 09/26/12 14:50

Matrix: Solid

Date Received: 09/27/12 07:00

Percent Solids: 87.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			163955	09/27/12 08:49	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164086	09/27/12 20:51	TDS	TAL CHI
Total/NA	Analysis	6010B		100	164173	09/28/12 11:12	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	163969	09/27/12 09:32	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-D1 SOUTH WALL (0-2 FT BGS)

Lab Sample ID: 500-50579-7

Date Collected: 09/26/12 14:50

Matrix: Solid

Date Received: 09/27/12 07:00

Percent Solids: 82.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			163955	09/27/12 08:49	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164086	09/27/12 20:57	TDS	TAL CHI
Total/NA	Analysis	6010B		100	164173	09/28/12 11:16	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	163969	09/27/12 09:32	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-D1 EAST WALL (0-2 FT BGS)

Lab Sample ID: 500-50579-8

Date Collected: 09/26/12 14:50

Matrix: Solid

Date Received: 09/27/12 07:00

Percent Solids: 85.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			163955	09/27/12 08:49	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164086	09/27/12 21:04	TDS	TAL CHI
Total/NA	Analysis	6010B		50	164173	09/28/12 11:20	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	163969	09/27/12 09:32	CMV	TAL CHI

# Lab Chronicle

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

**Client Sample ID: ECH-S-IRM1-HW-D1 WEST WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50579-9**

Date Collected: 09/26/12 14:50  
 Date Received: 09/27/12 07:00

Matrix: Solid  
 Percent Solids: 93.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			163955	09/27/12 08:49	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164086	09/27/12 21:10	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	163969	09/27/12 09:32	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-HW-D1 FLOOR (2 FT BGS)**

**Lab Sample ID: 500-50579-10**

Date Collected: 09/26/12 14:50  
 Date Received: 09/27/12 07:00

Matrix: Solid  
 Percent Solids: 82.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			163955	09/27/12 08:49	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164086	09/27/12 21:16	TDS	TAL CHI
Total/NA	Analysis	6010B		100	164173	09/28/12 11:24	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	163969	09/27/12 09:32	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-50579-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAP	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAP	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAP	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAP	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAP	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAP	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13



Chicago  
2417 Board Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

### Chain of Custody Record

**TestAme**  
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory

<b>Client Contact</b> Wanda Davis - URS Corp. ADQM	<b>Project Manager: Randy Palachek</b> Tel/Fax: 512.719.6006	<b>Site Contact: Keith Thompson</b> Lab Contact: Richard Wright	<b>Date: 26 September 2012</b> Carrier: TA Courier	<b>COC No:</b> 1 of 1 CO
<b>Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300</b> Newark, DE 19713 (302) 781-5892 (302) 781-5801 Fax	<b>Analysis Turnaround Time</b> Calendar (C) or Work Days (W) TAT if different from below 1-Day TAT <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input checked="" type="checkbox"/> 2 days <input checked="" type="checkbox"/> 1 day			<b>Job No.</b> 500-50579 <b>SDG No.</b> Revision
<b>Project Name: CMS Soil Sampling 4/12</b> <b>Site Location: DuPont East Chicago, Indiana</b> <b>PO#: LBIO-65636, Client Project#: 8267-7720100C-WHO650794</b>				

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	As. Pb. Cr.															Sample Specific N
ECH-S-IRM1-HW-C2 North Wall (0-2 ft bgs)	9/26/2012	9:30 AM	Composite	SOIL	1	N	X														48 -24 Hours TAT
ECH-S-IRM1-HW-C2 South Wall (0-2 ft bgs)	9/26/2012	9:30 AM	Composite	SOIL	1	N	X														-24 Hours TAT
ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)	9/26/2012	9:30 AM	Composite	SOIL	1	N	X														-24 Hours TAT
ECH-S-IRM1-HW-C2 West Wall (0-2 ft bgs)	9/26/2012	9:30 AM	Composite	SOIL	1	N	X														-24 Hours TAT
ECH-S-IRM1-HW-C2 Floor (2 ft bgs) (2-2.5 ft bgs)	9/26/2012	9:30 AM	Composite	SOIL	1	N	X														-24 Hours TAT
ECH-S-IRM1-HW-D1 North Wall (0-2 ft bgs)	9/26/2012	2:50 PM	Composite	SOIL	1	N	X														-24 Hours TAT
ECH-S-IRM1-HW-D1 South Wall (0-2 ft bgs)	9/26/2012	2:50 PM	Composite	SOIL	1	N	X														-24 Hours TAT
ECH-S-IRM1-HW-D1 East Wall (0-2 ft bgs)	9/26/2012	2:50 PM	Composite	SOIL	1	N	X														-24 Hours TAT
ECH-S-IRM1-HW-D1 West Wall (0-2 ft bgs)	9/26/2012	2:50 PM	Composite	SOIL	1	N	X														-24 Hours TAT
ECH-S-IRM1-HW-D1 Floor (2 ft bgs)	9/26/2012	2:50 PM	Composite	SOIL	1	N	X														-24 Hours TAT
						N															
						N															

Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other

Possible Hazard Identification: Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month):  Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Month

Special Instructions/QC Requirements & Comments:

Relinquished by: <i>N Dean</i>	Company: <i>Parsons</i>	Date/Time: <i>9-28-12/1707</i>	Received by: <i>Peace</i>	Company:	Date/Time: <i>4/28/12 17:07</i>
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-50579-1

**Login Number: 50579**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Lunt, Jeff T**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	1.0
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-50640-1  
Client Project/Site: IRM Sampling  
Revision: 1

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
12/24/2012 12:39:46 PM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-1

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**Job ID: 500-50640-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

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**Job Narrative  
500-50640-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 9/27/2012 4:20 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.2° C.

**Revised Report**

Sample ID changes made by Parsons - see amended COCs.

**Metals**

Method(s) 6010B: The CCB at line 40 in AD batch 164303 contained Pb above the RL. All associated samples are 10x and have been reported.

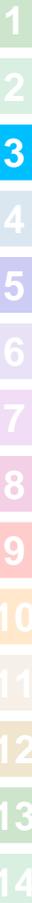
Method(s) 6010B: The matrix duplicate %RPD for 500-50640-9 was outside the control limits due to for Pb.

Method(s) 6010B: The matrix spike duplicate (MSD) recoveries for sample 500-50640-9 was outside control limits for As. The associated laboratory control sample (LCS) recovery met acceptance criteria.

Method(s) 6010B: The serial dilution performed for the following sample 500-50640-9 was outside control limits for Zn.

Method(s) 6010B: The matrix spike / matrix spike duplicate (MS/MSD) precision for sample 500-50640-9 was outside control limits for Zn. The associated laboratory control sample (LCS) met acceptance criteria.

No other analytical or quality issues were noted.



# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-1

## Client Sample ID: ECH-S-IRM1-HW-C2 North Wall (0-2 ft bgs)

Lab Sample ID: 500-50640-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	1100		53	12	mg/Kg	50	☼	6010B	Total/NA
Cadmium	73		0.21	0.053	mg/Kg	1	☼	6010B	Total/NA
Lead	23000	B ^	27	9.1	mg/Kg	50	☼	6010B	Total/NA
Zinc	34000	B	110	36	mg/Kg	50	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-C2 South Wall (0-2 ft bgs)

Lab Sample ID: 500-50640-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	420		1.2	0.26	mg/Kg	1	☼	6010B	Total/NA
Cadmium	85		0.24	0.059	mg/Kg	1	☼	6010B	Total/NA
Lead	27000	B ^	59	20	mg/Kg	100	☼	6010B	Total/NA
Zinc	53000	B	240	81	mg/Kg	100	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)

Lab Sample ID: 500-50640-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	26		1.0	0.22	mg/Kg	1	☼	6010B	Total/NA
Cadmium	200		0.20	0.050	mg/Kg	1	☼	6010B	Total/NA
Lead	1000	B ^	0.50	0.17	mg/Kg	1	☼	6010B	Total/NA
Zinc	4800	B	40	14	mg/Kg	20	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-C2 West Wall (0-2 ft bgs)

Lab Sample ID: 500-50640-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	350		1.2	0.25	mg/Kg	1	☼	6010B	Total/NA
Cadmium	40		0.23	0.058	mg/Kg	1	☼	6010B	Total/NA
Lead	33000	B ^	58	20	mg/Kg	100	☼	6010B	Total/NA
Zinc	37000	B	230	80	mg/Kg	100	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-C2 Floor (2-2.5 ft bgs)

Lab Sample ID: 500-50640-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	280		1.3	0.29	mg/Kg	1	☼	6010B	Total/NA
Cadmium	120		0.27	0.066	mg/Kg	1	☼	6010B	Total/NA
Lead	14000	B	67	23	mg/Kg	100	☼	6010B	Total/NA
Zinc	39000	B	270	91	mg/Kg	100	☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-1

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Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

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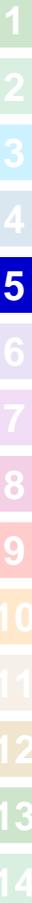
**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-50640-7	ECH-S-IRM1-HW-C2 North Wall (0-2 ft bgs)	Solid	09/27/12 11:10	09/27/12 16:20
500-50640-8	ECH-S-IRM1-HW-C2 South Wall (0-2 ft bgs)	Solid	09/27/12 11:15	09/27/12 16:20
500-50640-9	ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)	Solid	09/27/12 11:20	09/27/12 16:20
500-50640-10	ECH-S-IRM1-HW-C2 West Wall (0-2 ft bgs)	Solid	09/27/12 11:25	09/27/12 16:20
500-50640-11	ECH-S-IRM1-HW-C2 Floor (2-2.5 ft bgs)	Solid	09/27/12 11:30	09/27/12 16:20

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-1

**Client Sample ID: ECH-S-IRM1-HW-C2 North Wall (0-2 ft bgs)**

**Lab Sample ID: 500-50640-7**

Date Collected: 09/27/12 11:10

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 83.1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1100		53	12	mg/Kg	✱	09/27/12 17:00	09/28/12 12:53	50
Cadmium	73		0.21	0.053	mg/Kg	✱	09/27/12 17:00	09/28/12 11:32	1
Lead	23000	B ^	27	9.1	mg/Kg	✱	09/27/12 17:00	09/28/12 12:53	50
Zinc	34000	B	110	36	mg/Kg	✱	09/27/12 17:00	09/28/12 12:53	50

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-1

**Client Sample ID: ECH-S-IRM1-HW-C2 South Wall (0-2 ft bgs)**

**Lab Sample ID: 500-50640-8**

Date Collected: 09/27/12 11:15

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 79.5

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	420		1.2	0.26	mg/Kg	✱	09/27/12 17:00	09/28/12 11:38	1
Cadmium	85		0.24	0.059	mg/Kg	✱	09/27/12 17:00	09/28/12 11:38	1
Lead	27000	B ^	59	20	mg/Kg	✱	09/27/12 17:00	09/28/12 13:00	100
Zinc	53000	B	240	81	mg/Kg	✱	09/27/12 17:00	09/28/12 13:00	100



# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-1

**Client Sample ID: ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)**

**Lab Sample ID: 500-50640-9**

Date Collected: 09/27/12 11:20

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 93.8

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	26		1.0	0.22	mg/Kg	✱	09/27/12 17:00	09/28/12 11:45	1
Cadmium	200		0.20	0.050	mg/Kg	✱	09/27/12 17:00	09/28/12 11:45	1
Lead	1000	B ^	0.50	0.17	mg/Kg	✱	09/27/12 17:00	09/28/12 11:45	1
Zinc	4800	B	40	14	mg/Kg	✱	09/27/12 17:00	09/28/12 13:06	20



# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-1

**Client Sample ID: ECH-S-IRM1-HW-C2 West Wall (0-2 ft bgs)**

**Lab Sample ID: 500-50640-10**

Date Collected: 09/27/12 11:25

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 77.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	350		1.2	0.25	mg/Kg	✱	09/27/12 17:00	09/28/12 12:17	1
Cadmium	40		0.23	0.058	mg/Kg	✱	09/27/12 17:00	09/28/12 12:17	1
Lead	33000	B ^	58	20	mg/Kg	✱	09/27/12 17:00	09/28/12 13:37	100
Zinc	37000	B	230	80	mg/Kg	✱	09/27/12 17:00	09/28/12 13:37	100



# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-1

**Client Sample ID: ECH-S-IRM1-HW-C2 Floor (2-2.5 ft bgs)**

**Lab Sample ID: 500-50640-11**

Date Collected: 09/27/12 11:30

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 75.0

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	280		1.3	0.29	mg/Kg	☆	09/27/12 17:00	09/28/12 12:41	1
Cadmium	120		0.27	0.066	mg/Kg	☆	09/27/12 17:00	09/28/12 12:41	1
Lead	14000	B	67	23	mg/Kg	☆	09/27/12 17:00	09/28/12 13:58	100
Zinc	39000	B	270	91	mg/Kg	☆	09/27/12 17:00	09/28/12 13:58	100

# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC exceeds the control limits.
B	Compound was found in the blank and sample.
F	Duplicate RPD exceeds the control limit
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
F	RPD of the MS and MSD exceeds the control limits
F	MS or MSD exceeds the control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-1

## Metals

### Prep Batch: 164063

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50640-7	ECH-S-IRM1-HW-C2 North Wall (0-2 ft bgs)	Total/NA	Solid	3050B	
500-50640-8	ECH-S-IRM1-HW-C2 South Wall (0-2 ft bgs)	Total/NA	Solid	3050B	
500-50640-9	ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)	Total/NA	Solid	3050B	
500-50640-9 DU	ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)	Total/NA	Solid	3050B	
500-50640-9 MS	ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)	Total/NA	Solid	3050B	
500-50640-9 MSD	ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)	Total/NA	Solid	3050B	
500-50640-10	ECH-S-IRM1-HW-C2 West Wall (0-2 ft bgs)	Total/NA	Solid	3050B	
500-50640-11	ECH-S-IRM1-HW-C2 Floor (2-2.5 ft bgs)	Total/NA	Solid	3050B	
LCS 500-164063/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-164063/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 164303

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50640-7	ECH-S-IRM1-HW-C2 North Wall (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-7	ECH-S-IRM1-HW-C2 North Wall (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-8	ECH-S-IRM1-HW-C2 South Wall (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-8	ECH-S-IRM1-HW-C2 South Wall (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-9	ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-9	ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-9 DU	ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-9 DU	ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-9 MS	ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-9 MS	ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-9 MSD	ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-9 MSD	ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-10	ECH-S-IRM1-HW-C2 West Wall (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-10	ECH-S-IRM1-HW-C2 West Wall (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-11	ECH-S-IRM1-HW-C2 Floor (2-2.5 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-11	ECH-S-IRM1-HW-C2 Floor (2-2.5 ft bgs)	Total/NA	Solid	6010B	164063
LCS 500-164063/2-A	Lab Control Sample	Total/NA	Solid	6010B	164063
MB 500-164063/1-A	Method Blank	Total/NA	Solid	6010B	164063

## General Chemistry

### Analysis Batch: 164087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50640-7	ECH-S-IRM1-HW-C2 North Wall (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-50640-8	ECH-S-IRM1-HW-C2 South Wall (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-50640-9	ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-50640-10	ECH-S-IRM1-HW-C2 West Wall (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-50640-11	ECH-S-IRM1-HW-C2 Floor (2-2.5 ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-1

## Method: 6010B - Metals (ICP)

Lab Sample ID: MB 500-164063/1-A  
Matrix: Solid  
Analysis Batch: 164303

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 164063

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		09/27/12 17:00	09/28/12 10:03	1
Cadmium	ND		0.20	0.050	mg/Kg		09/27/12 17:00	09/28/12 10:03	1
Lead	0.207	J	0.50	0.17	mg/Kg		09/27/12 17:00	09/28/12 10:03	1
Zinc	1.41	J	2.0	0.69	mg/Kg		09/27/12 17:00	09/28/12 10:03	1

Lab Sample ID: LCS 500-164063/2-A  
Matrix: Solid  
Analysis Batch: 164303

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 164063

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.04		mg/Kg		90	80 - 120
Cadmium	5.00	4.81		mg/Kg		96	80 - 120
Lead	10.0	9.99		mg/Kg		100	80 - 120
Zinc	50.0	48.5		mg/Kg		97	80 - 120

Lab Sample ID: 500-50640-9 MS  
Matrix: Solid  
Analysis Batch: 164303

Client Sample ID: ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)  
Prep Type: Total/NA  
Prep Batch: 164063

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	26		10.3	34.8		mg/Kg	☼	85	75 - 125
Cadmium	200		5.13	179	4	mg/Kg	☼	-470	75 - 125
Lead	1000	B ^	10.3	903	4	mg/Kg	☼	-943	75 - 125

Lab Sample ID: 500-50640-9 MS  
Matrix: Solid  
Analysis Batch: 164303

Client Sample ID: ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)  
Prep Type: Total/NA  
Prep Batch: 164063

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	4800	B	51.3	4430	4	mg/Kg	☼	-760	75 - 125

Lab Sample ID: 500-50640-9 MSD  
Matrix: Solid  
Analysis Batch: 164303

Client Sample ID: ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)  
Prep Type: Total/NA  
Prep Batch: 164063

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	26		9.92	32.7	F	mg/Kg	☼	67	75 - 125	6	20
Cadmium	200		4.96	191	4	mg/Kg	☼	-228	75 - 125	7	20
Lead	1000	B ^	9.92	818	4	mg/Kg	☼	-1825	75 - 125	10	20

Lab Sample ID: 500-50640-9 MSD  
Matrix: Solid  
Analysis Batch: 164303

Client Sample ID: ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)  
Prep Type: Total/NA  
Prep Batch: 164063

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Zinc	4800	B	49.6	5480	4 F	mg/Kg	☼	1341	75 - 125	21	20

TestAmerica Chicago

# QC Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-1

## Method: 6010B - Metals (ICP) (Continued)

**Lab Sample ID: 500-50640-9 DU**

**Matrix: Solid**

**Analysis Batch: 164303**

**Client Sample ID: ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)**

**Prep Type: Total/NA**

**Prep Batch: 164063**

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Arsenic	26		21.6		mg/Kg	⊛	19	20
Cadmium	200		166		mg/Kg	⊛	20	20
Lead	1000	B ^	810	F	mg/Kg	⊛	21	20

**Lab Sample ID: 500-50640-9 DU**

**Matrix: Solid**

**Analysis Batch: 164303**

**Client Sample ID: ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)**

**Prep Type: Total/NA**

**Prep Batch: 164063**

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Zinc	4800	B	4580		mg/Kg	⊛	5	20



# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-1

## Client Sample ID: ECH-S-IRM1-HW-C2 North Wall (0-2 ft bgs)

Lab Sample ID: 500-50640-7

Date Collected: 09/27/12 11:10

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 83.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164063	09/27/12 17:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	164303	09/28/12 11:32	TDS	TAL CHI
Total/NA	Analysis	6010B		50	164303	09/28/12 12:53	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164087	09/28/12 07:16	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-C2 South Wall (0-2 ft bgs)

Lab Sample ID: 500-50640-8

Date Collected: 09/27/12 11:15

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 79.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164063	09/27/12 17:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	164303	09/28/12 11:38	TDS	TAL CHI
Total/NA	Analysis	6010B		100	164303	09/28/12 13:00	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164087	09/28/12 07:16	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)

Lab Sample ID: 500-50640-9

Date Collected: 09/27/12 11:20

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 93.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164063	09/27/12 17:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	164303	09/28/12 11:45	TDS	TAL CHI
Total/NA	Analysis	6010B		20	164303	09/28/12 13:06	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164087	09/28/12 07:16	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-C2 West Wall (0-2 ft bgs)

Lab Sample ID: 500-50640-10

Date Collected: 09/27/12 11:25

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 77.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164063	09/27/12 17:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	164303	09/28/12 12:17	TDS	TAL CHI
Total/NA	Analysis	6010B		100	164303	09/28/12 13:37	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164087	09/28/12 07:16	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-C2 Floor (2-2.5 ft bgs)

Lab Sample ID: 500-50640-11

Date Collected: 09/27/12 11:30

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 75.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164063	09/27/12 17:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	164303	09/28/12 12:41	TDS	TAL CHI

TestAmerica Chicago

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-1

**Client Sample ID: ECH-S-IRM1-HW-C2 Floor (2-2.5 ft bgs)**

**Lab Sample ID: 500-50640-11**

**Date Collected: 09/27/12 11:30**

**Matrix: Solid**

**Date Received: 09/27/12 16:20**

**Percent Solids: 75.0**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	6010B		100	164303	09/28/12 13:58	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164087	09/28/12 07:16	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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# Certification Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAP	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAP	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAP	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAP	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAP	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAP	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13





Chicago  
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### Chain of Custody Record

**TestAme**  
THE LEADER IN ENVIRONMENTAL

TestAmerica Laborator

<b>Client Contact</b> Wanda Davis - URS Corp. ADQM Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300 Newark, DE 19713 (302) 761-5862 (302) 781-5901 Fax Project Name: CIMS Soil Sampling 4/12 Site Location: DuPont East Chicago, Indiana PO#: LBIO-65636, Client Project#: 9267-7720100C-WHC650794	<b>Project Manager: Randy Palachek</b> Tel/Fax: 512.719.6006	<b>Site Contact: Keith Thompson</b> Lab Contact: Richard Wright	<b>Date: 27 September 2012</b> Carrier: TA Courier	<b>COC No:</b> 1 of 1 CO <b>Job No:</b> 500-50040 <b>SDG No:</b> Revision 2
<b>Analysis Turnaround Time</b> Calendar (C) or Work Days (W) TAT if different from Below: 4-Day TAT <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input checked="" type="checkbox"/> 1 day				

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	As, Pb, Cd	Sample Specific N
ECH EH-S-IRM1-HW-A1 (0-2 ft bgs)	9/27/2012	0740	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-A2 (0-2 ft bgs)	9/27/2012	0750	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-A3 (0-2 ft bgs)	9/27/2012	0800	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-A4 (0-2 ft bgs)	9/27/2012	0830	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-A5 (0-2 ft bgs)	9/27/2012	0820	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-A6 (0-2 ft bgs)	9/27/2012	0810	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-C2 North Wall (0-2 ft bgs)	9/27/2012	1110	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-C2 South Wall (0-2 ft bgs)	9/27/2012	1115	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)	9/27/2012	1120	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-C2 West Wall (0-2 ft bgs)	9/27/2012	1125	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-C2 Floor (2 ft bgs) (2-2.5 ft bgs)	9/27/2012	1130	Composite	SOIL	1	N	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months

Special Instructions/QC Requirements & Comments:  
24 hr TAT

Relinquished by: <i>N. Dean F. III</i>	Company: <i>Parsons</i>	Date/Time: <i>9-27-12/1445</i>	Received by: <i>[Signature]</i>	Company: <i>TA</i>	Date/Time: <i>9-27-12 1445</i>
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

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## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-50640-1

**Login Number: 50640**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Scott, Sherri L**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-50640-2  
Client Project/Site: IRM Sampling  
Revision: 1

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
12/24/2012 12:43:54 PM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-2

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**Job ID: 500-50640-2**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-50640-2**

**Comments**

No additional comments.

**Receipt**

The samples were received on 9/27/2012 4:20 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.2° C.

**Revised Report**

Sample ID changes made by Parsons - see amended COCs.

**Metals**

Method(s) 6010B: The CCB at line 40 in AD batch 164303 contained Pb above the RL. All associated samples are 10x and have been reported.

No other analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-2

## Client Sample ID: ECH-S-IRM1-HW-A1 (0-2 ft bgs)

Lab Sample ID: 500-50640-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	27		1.5	0.32	mg/Kg	1	☼	6010B	Total/NA
Cadmium	5.1		0.29	0.073	mg/Kg	1	☼	6010B	Total/NA
Lead	530	B	0.73	0.25	mg/Kg	1	☼	6010B	Total/NA
Zinc	5100	B	29	10	mg/Kg	10	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-A2 (0-2 ft bgs)

Lab Sample ID: 500-50640-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	16		2.4	0.52	mg/Kg	1	☼	6010B	Total/NA
Cadmium	4.2		0.48	0.12	mg/Kg	1	☼	6010B	Total/NA
Lead	210	B	1.2	0.41	mg/Kg	1	☼	6010B	Total/NA
Zinc	3300	B	4.8	1.6	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-A3 (0-2 ft bgs)

Lab Sample ID: 500-50640-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.5		1.1	0.25	mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.81		0.23	0.056	mg/Kg	1	☼	6010B	Total/NA
Lead	68	B	0.57	0.20	mg/Kg	1	☼	6010B	Total/NA
Zinc	280	B	2.3	0.78	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-A4 (0-2 ft bgs)

Lab Sample ID: 500-50640-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.7		1.6	0.36	mg/Kg	1	☼	6010B	Total/NA
Cadmium	7.3		0.33	0.081	mg/Kg	1	☼	6010B	Total/NA
Lead	86	B	0.82	0.28	mg/Kg	1	☼	6010B	Total/NA
Zinc	570	B	3.3	1.1	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-A5 (0-2 ft bgs)

Lab Sample ID: 500-50640-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	1.4		1.4	0.30	mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.24	J	0.28	0.068	mg/Kg	1	☼	6010B	Total/NA
Lead	11	B ^	0.69	0.24	mg/Kg	1	☼	6010B	Total/NA
Zinc	78	B	2.8	0.95	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-A6 (0-2 ft bgs)

Lab Sample ID: 500-50640-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	6.4		1.5	0.32	mg/Kg	1	☼	6010B	Total/NA
Cadmium	1.4		0.29	0.073	mg/Kg	1	☼	6010B	Total/NA
Lead	10	B ^	0.74	0.25	mg/Kg	1	☼	6010B	Total/NA
Zinc	200	B	2.9	1.0	mg/Kg	1	☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-2

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Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

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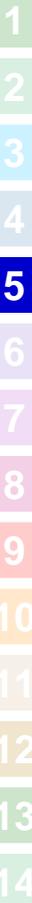
**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

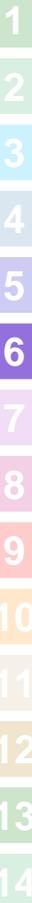


# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-50640-1	ECH-S-IRM1-HW-A1 (0-2 ft bgs)	Solid	09/27/12 07:40	09/27/12 16:20
500-50640-2	ECH-S-IRM1-HW-A2 (0-2 ft bgs)	Solid	09/27/12 07:50	09/27/12 16:20
500-50640-3	ECH-S-IRM1-HW-A3 (0-2 ft bgs)	Solid	09/27/12 08:00	09/27/12 16:20
500-50640-4	ECH-S-IRM1-HW-A4 (0-2 ft bgs)	Solid	09/27/12 08:30	09/27/12 16:20
500-50640-5	ECH-S-IRM1-HW-A5 (0-2 ft bgs)	Solid	09/27/12 08:20	09/27/12 16:20
500-50640-6	ECH-S-IRM1-HW-A6 (0-2 ft bgs)	Solid	09/27/12 08:10	09/27/12 16:20



# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-2

**Client Sample ID: ECH-S-IRM1-HW-A1 (0-2 ft bgs)**

**Lab Sample ID: 500-50640-1**

Date Collected: 09/27/12 07:40

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 61.2

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	27		1.5	0.32	mg/Kg	☼	09/27/12 17:00	09/28/12 10:40	1
Cadmium	5.1		0.29	0.073	mg/Kg	☼	09/27/12 17:00	09/28/12 10:40	1
Lead	530	B	0.73	0.25	mg/Kg	☼	09/27/12 17:00	09/28/12 10:40	1
Zinc	5100	B	29	10	mg/Kg	☼	09/27/12 17:00	09/28/12 12:47	10



# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-2

**Client Sample ID: ECH-S-IRM1-HW-A2 (0-2 ft bgs)**

**Lab Sample ID: 500-50640-2**

Date Collected: 09/27/12 07:50

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 37.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	16		2.4	0.52	mg/Kg	☼	09/27/12 17:00	09/28/12 10:47	1
Cadmium	4.2		0.48	0.12	mg/Kg	☼	09/27/12 17:00	09/28/12 10:47	1
Lead	210	B	1.2	0.41	mg/Kg	☼	09/27/12 17:00	09/28/12 10:47	1
Zinc	3300	B	4.8	1.6	mg/Kg	☼	09/27/12 17:00	09/28/12 10:47	1



# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-2

**Client Sample ID: ECH-S-IRM1-HW-A3 (0-2 ft bgs)**

**Lab Sample ID: 500-50640-3**

Date Collected: 09/27/12 08:00

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 81.8

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.5		1.1	0.25	mg/Kg	✱	09/27/12 17:00	09/28/12 10:53	1
Cadmium	0.81		0.23	0.056	mg/Kg	✱	09/27/12 17:00	09/28/12 10:53	1
Lead	68	B	0.57	0.20	mg/Kg	✱	09/27/12 17:00	09/28/12 10:53	1
Zinc	280	B	2.3	0.78	mg/Kg	✱	09/27/12 17:00	09/28/12 10:53	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-2

**Client Sample ID: ECH-S-IRM1-HW-A4 (0-2 ft bgs)**

**Lab Sample ID: 500-50640-4**

Date Collected: 09/27/12 08:30

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 57.5

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.7		1.6	0.36	mg/Kg	✱	09/27/12 17:00	09/28/12 10:59	1
Cadmium	7.3		0.33	0.081	mg/Kg	✱	09/27/12 17:00	09/28/12 10:59	1
Lead	86	B	0.82	0.28	mg/Kg	✱	09/27/12 17:00	09/28/12 10:59	1
Zinc	570	B	3.3	1.1	mg/Kg	✱	09/27/12 17:00	09/28/12 10:59	1



# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-2

**Client Sample ID: ECH-S-IRM1-HW-A5 (0-2 ft bgs)**

**Lab Sample ID: 500-50640-5**

Date Collected: 09/27/12 08:20

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 69.7

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.4		1.4	0.30	mg/Kg	✱	09/27/12 17:00	09/28/12 11:20	1
Cadmium	0.24	J	0.28	0.068	mg/Kg	✱	09/27/12 17:00	09/28/12 11:20	1
Lead	11	B ^	0.69	0.24	mg/Kg	✱	09/27/12 17:00	09/28/12 11:20	1
Zinc	78	B	2.8	0.95	mg/Kg	✱	09/27/12 17:00	09/28/12 11:20	1



# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-2

**Client Sample ID: ECH-S-IRM1-HW-A6 (0-2 ft bgs)**

**Lab Sample ID: 500-50640-6**

Date Collected: 09/27/12 08:10

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 66.9

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.4		1.5	0.32	mg/Kg	✱	09/27/12 17:00	09/28/12 11:26	1
Cadmium	1.4		0.29	0.073	mg/Kg	✱	09/27/12 17:00	09/28/12 11:26	1
Lead	10	B ^	0.74	0.25	mg/Kg	✱	09/27/12 17:00	09/28/12 11:26	1
Zinc	200	B	2.9	1.0	mg/Kg	✱	09/27/12 17:00	09/28/12 11:26	1



# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-2

## Qualifiers

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC exceeds the control limits.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-2

## Metals

### Prep Batch: 164063

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50640-1	ECH-S-IRM1-HW-A1 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-50640-2	ECH-S-IRM1-HW-A2 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-50640-3	ECH-S-IRM1-HW-A3 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-50640-4	ECH-S-IRM1-HW-A4 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-50640-5	ECH-S-IRM1-HW-A5 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-50640-6	ECH-S-IRM1-HW-A6 (0-2 ft bgs)	Total/NA	Solid	3050B	
LCS 500-164063/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-164063/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 164303

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50640-1	ECH-S-IRM1-HW-A1 (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-1	ECH-S-IRM1-HW-A1 (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-2	ECH-S-IRM1-HW-A2 (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-3	ECH-S-IRM1-HW-A3 (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-4	ECH-S-IRM1-HW-A4 (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-5	ECH-S-IRM1-HW-A5 (0-2 ft bgs)	Total/NA	Solid	6010B	164063
500-50640-6	ECH-S-IRM1-HW-A6 (0-2 ft bgs)	Total/NA	Solid	6010B	164063
LCS 500-164063/2-A	Lab Control Sample	Total/NA	Solid	6010B	164063
MB 500-164063/1-A	Method Blank	Total/NA	Solid	6010B	164063

## General Chemistry

### Analysis Batch: 164087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50640-1	ECH-S-IRM1-HW-A1 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-50640-2	ECH-S-IRM1-HW-A2 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-50640-3	ECH-S-IRM1-HW-A3 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-50640-4	ECH-S-IRM1-HW-A4 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-50640-5	ECH-S-IRM1-HW-A5 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-50640-6	ECH-S-IRM1-HW-A6 (0-2 ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-2

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-164063/1-A**  
**Matrix: Solid**  
**Analysis Batch: 164303**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 164063**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		09/27/12 17:00	09/28/12 10:03	1
Cadmium	ND		0.20	0.050	mg/Kg		09/27/12 17:00	09/28/12 10:03	1
Lead	0.207	J	0.50	0.17	mg/Kg		09/27/12 17:00	09/28/12 10:03	1
Zinc	1.41	J	2.0	0.69	mg/Kg		09/27/12 17:00	09/28/12 10:03	1

**Lab Sample ID: LCS 500-164063/2-A**  
**Matrix: Solid**  
**Analysis Batch: 164303**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 164063**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.04		mg/Kg		90	80 - 120
Cadmium	5.00	4.81		mg/Kg		96	80 - 120
Lead	10.0	9.99		mg/Kg		100	80 - 120
Zinc	50.0	48.5		mg/Kg		97	80 - 120

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-2

## Client Sample ID: ECH-S-IRM1-HW-A1 (0-2 ft bgs)

Lab Sample ID: 500-50640-1

Date Collected: 09/27/12 07:40

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 61.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164063	09/27/12 17:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	164303	09/28/12 10:40	TDS	TAL CHI
Total/NA	Analysis	6010B		10	164303	09/28/12 12:47	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164087	09/28/12 07:16	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-A2 (0-2 ft bgs)

Lab Sample ID: 500-50640-2

Date Collected: 09/27/12 07:50

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 37.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164063	09/27/12 17:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	164303	09/28/12 10:47	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164087	09/28/12 07:16	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-A3 (0-2 ft bgs)

Lab Sample ID: 500-50640-3

Date Collected: 09/27/12 08:00

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 81.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164063	09/27/12 17:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	164303	09/28/12 10:53	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164087	09/28/12 07:16	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-A4 (0-2 ft bgs)

Lab Sample ID: 500-50640-4

Date Collected: 09/27/12 08:30

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 57.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164063	09/27/12 17:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	164303	09/28/12 10:59	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164087	09/28/12 07:16	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-A5 (0-2 ft bgs)

Lab Sample ID: 500-50640-5

Date Collected: 09/27/12 08:20

Matrix: Solid

Date Received: 09/27/12 16:20

Percent Solids: 69.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164063	09/27/12 17:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	164303	09/28/12 11:20	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164087	09/28/12 07:16	CMV	TAL CHI

TestAmerica Chicago

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-2

**Client Sample ID: ECH-S-IRM1-HW-A6 (0-2 ft bgs)**

**Lab Sample ID: 500-50640-6**

**Date Collected: 09/27/12 08:10**

**Matrix: Solid**

**Date Received: 09/27/12 16:20**

**Percent Solids: 66.9**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164063	09/27/12 17:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	164303	09/28/12 11:26	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164087	09/28/12 07:16	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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# Certification Summary

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-50640-2

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAP	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAP	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAP	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAP	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAP	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAP	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13

### Chain of Custody Record

TestAmerica Laborator

<b>Client Contact</b> Wanda Davis - URS Corp. ADQM Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300 Newark, DE 19713 (302) 781-5892 (302) 781-5901 Fax Project Name: CMS Soil Sampling 4/12 Site Location: DuPont East Chicago, Indiana PO#: LBIO-65636, Client Project#: 9267-7720100C-WHO650794		<b>Project Manager: Randy Palachek</b> Tel/Fax: 512.719.6006		<b>Site Contact: Keith Thompson</b> Lab Contact: Richard Wright		<b>Date: 18 September 2012</b> Carrier: TA Courier		<b>COC No: 500-50640</b> 1 of 1 CO	
		<b>Analysis Turnaround Time</b> Calendar (C) or Work Days (W) _____ TAT if different from Below 3-Day TAT _____ <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day						Job No. _____ SDG No. _____	
<b>Sample Identification</b>		<b>Sample Date</b>	<b>Sample Time</b>	<b>Sample Type</b>	<b>Matrix</b>	<b># of Cont.</b>	<b>Filtered Sample</b>	<b>As, Ph, Cu</b>	<b>Sample Specific N</b>
1	EH-S-IRM1-HW-A1	9/27/2012	0740	Composite	SOIL	1	N X		
2	EH-S-IRM1-HW-A2	9/27/2012	0750	Composite	SOIL	1	N X		
3	EH-S-IRM1-HW-A3	9/27/2012	0800	Composite	SOIL	1	N X		
4	EH-S-IRM1-HW-A4	9/27/2012	0830	Composite	SOIL	1	N X		
5	EH-S-IRM1-HW-A5	9/27/2012	0820	Composite	SOIL	1	N X		
6	EH-S-IRM1-HW-A6	9/27/2012	0810	Composite	SOIL	1	N X		
7	EH-S-IRM1-HW-C2 North Wall (0-2 ft bgs)	9/27/2012	1110	Composite	SOIL	1	N X		
8	EH-S-IRM1-HW-C2 South Wall (0-2 ft bgs)	9/27/2012	1115	Composite	SOIL	1	N X		
9	EH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)	9/27/2012	1120	Composite	SOIL	1	N X		
10	EH-S-IRM1-HW-C2 West Wall (0-2 ft bgs)	9/27/2012	1125	Composite	SOIL	1	N X		
11	EH-S-IRM1-HW-C2 Floor (2 ft bgs)	9/27/2012	1130	Composite	SOIL	1	N X		
							N		
<b>Preservation Used:</b> 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____									
<b>Possible Hazard Identification</b> <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/>								<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b> <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
<b>Special Instructions/QC Requirements &amp; Comments:</b>									
Relinquished by: <i>R. Deon</i>		Company: <i>Parsons</i>		Date/Time: <i>9-27-12/1449</i>		Received by: <i>Anthony L. White</i>		Company: <i>TA</i>	
Relinquished by: <i>Anthony L. White</i>		Company: <i>TA</i>		Date/Time: <i>9/27/12/1620</i>		Received by: <i>Shawn L. White</i>		Company: <i>TA-CHE</i>	
Relinquished by: <i>Shawn L. White</i>		Company: <i>TA</i>		Date/Time: _____		Received by: _____		Company: _____	



Chicago  
2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

### Chain of Custody Record

**TestAme**  
THE LEADER IN ENVIRONMENTAL

TestAmerica Laborator

<b>Client Contact</b> Wanda Davis - URS Corp. ADQM Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300 Newark, DE 19713 (302) 761-5862 (302) 781-5901 Fax Project Name: CIMS Soil Sampling 4/12 Site Location: DuPont East Chicago, Indiana PO#: LBIO-65636, Client Project#: 9267-7720100C-WHC650794	<b>Project Manager: Randy Palachek</b> Tel/Fax: 512.719.6006	<b>Site Contact: Keith Thompson</b> Lab Contact: Richard Wright	<b>Date: 27 September 2012</b> Carrier: TA Courier	<b>COC No:</b> 1 of 1 CO <b>Job No:</b> 500-50040 <b>SDG No:</b> Revision 2
<b>Analysis Turnaround Time</b> Calendar (C) or Work Days (W) TAT if different from Below: 4-Day TAT <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input checked="" type="checkbox"/> 1 day				

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	As, Pb, Cd	Sample Specific N
ECH EH-S-IRM1-HW-A1 (0-2 ft bgs)	9/27/2012	0740	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-A2 (0-2 ft bgs)	9/27/2012	0750	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-A3 (0-2 ft bgs)	9/27/2012	0800	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-A4 (0-2 ft bgs)	9/27/2012	0830	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-A5 (0-2 ft bgs)	9/27/2012	0820	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-A6 (0-2 ft bgs)	9/27/2012	0810	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-C2 North Wall (0-2 ft bgs)	9/27/2012	1110	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-C2 South Wall (0-2 ft bgs)	9/27/2012	1115	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-C2 East Wall (0-2 ft bgs)	9/27/2012	1120	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-C2 West Wall (0-2 ft bgs)	9/27/2012	1125	Composite	SOIL	1	N	X	
ECH EH-S-IRM1-HW-C2 Floor (2 ft bgs) (2-2.5 ft bgs)	9/27/2012	1130	Composite	SOIL	1	N	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months

Special Instructions/QC Requirements & Comments:  
24 hr TAT

Relinquished by: <i>N. Dean F. III</i>	Company: <i>Parsons</i>	Date/Time: <i>9-27-12/1445</i>	Received by: <i>[Signature]</i>	Company: <i>TA</i>	Date/Time: <i>9-27-12 1445</i>
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-50640-2

**Login Number: 50640**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Scott, Sherri L**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Chicago

2417 Bond Street

University Park, IL 60484

Tel: (708)534-5200

TestAmerica Job ID: 500-50703-1

Client Project/Site: CMS Soil Sampling 4/12

Revision: 1

For:

URS Corporation

C/O Dupont

Iron Hill Corporate Center

4051 Ogletown Road, Suite 300

Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:

12/20/2012 2:15:09 PM

Richard Wright

Project Manager II

[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through

TotalAccess

Have a Question?



Visit us at:

[www.testamericainc.com](http://www.testamericainc.com)

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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# Case Narrative

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

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**Job ID: 500-50703-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-50703-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 9/28/2012 4:31 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.4° C

**Revised Report**

Sample ID changes made by Parsons - see amended COCs.

**Metals**

Method(s) 6010B: The serial dilution performed for the following sample, 500-50703-6, was outside control limits for As and Cd.

Method(s) 6010B: The matrix duplicate %RPD for sample 500-50703-6 was outside the control limits for As and Cd.

Method(s) 6010B: The continuing calibration blanks (CCB) at lines 64 and 69 in AD batch 164401 contained Pb above the RL. Samples 500-50703-11,13, and 14 are 10x and have been reported.

No other analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

## Client Sample ID: ECH-S-IRM1-HW-D3 NORTH WALL (0-2 FT BGS)

Lab Sample ID: 500-50703-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	320		1.1	0.25	mg/Kg	1	☼	6010B	Total/NA
Cadmium	93		0.23	0.056	mg/Kg	1	☼	6010B	Total/NA
Lead	4100	B	0.57	0.19	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D3 NORTH WALL (0-2 FT BGS) DUP

Lab Sample ID: 500-50703-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	330		1.2	0.25	mg/Kg	1	☼	6010B	Total/NA
Cadmium	65		0.23	0.058	mg/Kg	1	☼	6010B	Total/NA
Lead	3900	B	0.58	0.20	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D3 SOUTH WALL (0-2 FT BGS)

Lab Sample ID: 500-50703-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	180		1.1	0.24	mg/Kg	1	☼	6010B	Total/NA
Cadmium	44		0.22	0.054	mg/Kg	1	☼	6010B	Total/NA
Lead	5200	B	0.55	0.19	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D3 EAST WALL (0-2 FT BGS)

Lab Sample ID: 500-50703-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	270		1.2	0.27	mg/Kg	1	☼	6010B	Total/NA
Cadmium	100		0.25	0.061	mg/Kg	1	☼	6010B	Total/NA
Lead	11000	B	12	4.3	mg/Kg	20	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D3 WEST WALL (0-2 FT BGS)

Lab Sample ID: 500-50703-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	260		1.2	0.26	mg/Kg	1	☼	6010B	Total/NA
Cadmium	84		0.24	0.059	mg/Kg	1	☼	6010B	Total/NA
Lead	9900	B	12	4.1	mg/Kg	20	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)

Lab Sample ID: 500-50703-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	270	V	1.0	0.23	mg/Kg	1	☼	6010B	Total/NA
Cadmium	82	V	0.21	0.052	mg/Kg	1	☼	6010B	Total/NA
Lead	7200	B	10	3.6	mg/Kg	20	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D4 NORTH WALL (0-2 FT BGS)

Lab Sample ID: 500-50703-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	520		1.3	0.29	mg/Kg	1	☼	6010B	Total/NA
Cadmium	5700		26	6.5	mg/Kg	100	☼	6010B	Total/NA

TestAmerica Chicago

# Detection Summary

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

## Client Sample ID: ECH-S-IRM1-HW-D4 NORTH WALL (0-2 FT BGS) (Continued)

Lab Sample ID: 500-50703-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	120000	B	66	23	mg/Kg	100	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D4 SOUTH WALL (0-2 FT BGS)

Lab Sample ID: 500-50703-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	530		1.1	0.24	mg/Kg	1	*	6010B	Total/NA
Cadmium	5800		22	5.5	mg/Kg	100	*	6010B	Total/NA
Lead	110000	B	55	19	mg/Kg	100	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D4 EAST WALL (0-2 FT BGS)

Lab Sample ID: 500-50703-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	480		1.3	0.29	mg/Kg	1	*	6010B	Total/NA
Cadmium	5000		26	6.5	mg/Kg	100	*	6010B	Total/NA
Lead	120000	B	66	23	mg/Kg	100	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D4 WEST WALL (0-2 FT BGS)

Lab Sample ID: 500-50703-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	390		1.2	0.27	mg/Kg	1	*	6010B	Total/NA
Cadmium	5400		25	6.1	mg/Kg	100	*	6010B	Total/NA
Lead	130000	B	62	21	mg/Kg	100	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D4 FLOOR (2-2.5 FT BGS)

Lab Sample ID: 500-50703-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	8.9		1.9	0.42	mg/Kg	1	*	6010B	Total/NA
Cadmium	380		0.38	0.095	mg/Kg	1	*	6010B	Total/NA
Lead	1500	B	0.95	0.33	mg/Kg	1	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D5 (0-2 FT BGS)

Lab Sample ID: 500-50703-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	72		1.1	0.25	mg/Kg	1	*	6010B	Total/NA
Cadmium	360		0.23	0.056	mg/Kg	1	*	6010B	Total/NA
Lead	7100	B	11	3.9	mg/Kg	20	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D6 (0-2 FT BGS)

Lab Sample ID: 500-50703-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	52		1.1	0.23	mg/Kg	1	*	6010B	Total/NA
Cadmium	190		0.21	0.053	mg/Kg	1	*	6010B	Total/NA
Lead	1500	B	0.54	0.18	mg/Kg	1	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-G1 (0-2 FT BGS)

Lab Sample ID: 500-50703-14

TestAmerica Chicago

# Detection Summary

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

**Client Sample ID: ECH-S-IRM1-HW-G1 (0-2 FT BGS)**  
**(Continued)**

**Lab Sample ID: 500-50703-14**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	23		1.1	0.25	mg/Kg	1	*	6010B	Total/NA
Cadmium	12		0.23	0.056	mg/Kg	1	*	6010B	Total/NA
Lead	520	B	0.57	0.20	mg/Kg	1	*	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

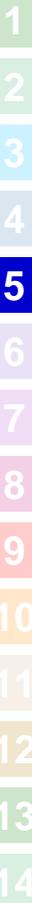
**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Sample Summary

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-50703-1	ECH-S-IRM1-HW-D3 NORTH WALL (0-2 FT BGS)	Solid	09/28/12 08:15	09/28/12 16:31
500-50703-2	ECH-S-IRM1-HW-D3 NORTH WALL (0-2 FT BGS) DUP	Solid	09/28/12 08:15	09/28/12 16:31
500-50703-3	ECH-S-IRM1-HW-D3 SOUTH WALL (0-2 FT BGS)	Solid	09/28/12 08:20	09/28/12 16:31
500-50703-4	ECH-S-IRM1-HW-D3 EAST WALL (0-2 FT BGS)	Solid	09/28/12 08:25	09/28/12 16:31
500-50703-5	ECH-S-IRM1-HW-D3 WEST WALL (0-2 FT BGS)	Solid	09/28/12 08:30	09/28/12 16:31
500-50703-6	ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)	Solid	09/28/12 08:35	09/28/12 16:31
500-50703-7	ECH-S-IRM1-HW-D4 NORTH WALL (0-2 FT BGS)	Solid	09/28/12 09:45	09/28/12 16:31
500-50703-8	ECH-S-IRM1-HW-D4 SOUTH WALL (0-2 FT BGS)	Solid	09/28/12 09:50	09/28/12 16:31
500-50703-9	ECH-S-IRM1-HW-D4 EAST WALL (0-2 FT BGS)	Solid	09/28/12 09:55	09/28/12 16:31
500-50703-10	ECH-S-IRM1-HW-D4 WEST WALL (0-2 FT BGS)	Solid	09/28/12 10:00	09/28/12 16:31
500-50703-11	ECH-S-IRM1-HW-D4 FLOOR (2-2.5 FT BGS)	Solid	09/28/12 10:05	09/28/12 16:31
500-50703-12	ECH-S-IRM1-HW-D5 (0-2 FT BGS)	Solid	09/28/12 11:50	09/28/12 16:31
500-50703-13	ECH-S-IRM1-HW-D6 (0-2 FT BGS)	Solid	09/28/12 12:40	09/28/12 16:31
500-50703-14	ECH-S-IRM1-HW-G1 (0-2 FT BGS)	Solid	09/27/12 17:00	09/28/12 16:31

# Client Sample Results

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

**Client Sample ID: ECH-S-IRM1-HW-D3 NORTH WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50703-1**

**Date Collected: 09/28/12 08:15**

**Matrix: Solid**

**Date Received: 09/28/12 16:31**

**Percent Solids: 80.0**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	320		1.1	0.25	mg/Kg	☼	10/01/12 08:45	10/02/12 05:52	1
Cadmium	93		0.23	0.056	mg/Kg	☼	10/01/12 08:45	10/02/12 05:52	1
Lead	4100	B	0.57	0.19	mg/Kg	☼	10/01/12 08:45	10/02/12 05:52	1

# Client Sample Results

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

**Client Sample ID: ECH-S-IRM1-HW-D3 NORTH WALL (0-2 FT BGS) DUP**

**Lab Sample ID: 500-50703-2**

Date Collected: 09/28/12 08:15

Matrix: Solid

Date Received: 09/28/12 16:31

Percent Solids: 79.3

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	330		1.2	0.25	mg/Kg	☼	10/01/12 08:45	10/02/12 05:58	1
Cadmium	65		0.23	0.058	mg/Kg	☼	10/01/12 08:45	10/02/12 05:58	1
Lead	3900	B	0.58	0.20	mg/Kg	☼	10/01/12 08:45	10/02/12 05:58	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

**Client Sample ID: ECH-S-IRM1-HW-D3 SOUTH WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50703-3**

Date Collected: 09/28/12 08:20

Matrix: Solid

Date Received: 09/28/12 16:31

Percent Solids: 82.1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	180		1.1	0.24	mg/Kg	☼	10/01/12 08:45	10/02/12 06:04	1
Cadmium	44		0.22	0.054	mg/Kg	☼	10/01/12 08:45	10/02/12 06:04	1
Lead	5200	B	0.55	0.19	mg/Kg	☼	10/01/12 08:45	10/02/12 06:04	1

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# Client Sample Results

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

**Client Sample ID: ECH-S-IRM1-HW-D3 EAST WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50703-4**

Date Collected: 09/28/12 08:25

Matrix: Solid

Date Received: 09/28/12 16:31

Percent Solids: 80.2

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	270		1.2	0.27	mg/Kg	☼	10/01/12 08:45	10/02/12 06:10	1
Cadmium	100		0.25	0.061	mg/Kg	☼	10/01/12 08:45	10/02/12 06:10	1
Lead	11000	B	12	4.3	mg/Kg	☼	10/01/12 08:45	10/02/12 09:54	20

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# Client Sample Results

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

**Client Sample ID: ECH-S-IRM1-HW-D3 WEST WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50703-5**

Date Collected: 09/28/12 08:30

Matrix: Solid

Date Received: 09/28/12 16:31

Percent Solids: 79.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	260		1.2	0.26	mg/Kg	☼	10/01/12 08:45	10/02/12 06:16	1
Cadmium	84		0.24	0.059	mg/Kg	☼	10/01/12 08:45	10/02/12 06:16	1
Lead	9900	B	12	4.1	mg/Kg	☼	10/01/12 08:45	10/02/12 09:58	20

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# Client Sample Results

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

**Client Sample ID: ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)**

**Lab Sample ID: 500-50703-6**

Date Collected: 09/28/12 08:35

Matrix: Solid

Date Received: 09/28/12 16:31

Percent Solids: 79.8

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	270	V	1.0	0.23	mg/Kg	☼	10/01/12 08:45	10/02/12 06:23	1
Cadmium	82	V	0.21	0.052	mg/Kg	☼	10/01/12 08:45	10/02/12 06:23	1
Lead	7200	B	10	3.6	mg/Kg	☼	10/01/12 08:45	10/02/12 10:02	20

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# Client Sample Results

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

**Client Sample ID: ECH-S-IRM1-HW-D4 NORTH WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50703-7**

Date Collected: 09/28/12 09:45

Matrix: Solid

Date Received: 09/28/12 16:31

Percent Solids: 74.2

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	520		1.3	0.29	mg/Kg	☼	10/01/12 08:45	10/02/12 07:18	1
Cadmium	5700		26	6.5	mg/Kg	☼	10/01/12 08:45	10/02/12 10:31	100
Lead	120000	B	66	23	mg/Kg	☼	10/01/12 08:45	10/02/12 10:31	100

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# Client Sample Results

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

**Client Sample ID: ECH-S-IRM1-HW-D4 SOUTH WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50703-8**

Date Collected: 09/28/12 09:50

Matrix: Solid

Date Received: 09/28/12 16:31

Percent Solids: 75.7

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	530		1.1	0.24	mg/Kg	☼	10/01/12 08:45	10/02/12 07:25	1
Cadmium	5800		22	5.5	mg/Kg	☼	10/01/12 08:45	10/02/12 10:35	100
Lead	110000	B	55	19	mg/Kg	☼	10/01/12 08:45	10/02/12 10:35	100

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# Client Sample Results

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

**Client Sample ID: ECH-S-IRM1-HW-D4 EAST WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50703-9**

Date Collected: 09/28/12 09:55

Matrix: Solid

Date Received: 09/28/12 16:31

Percent Solids: 75.8

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	480		1.3	0.29	mg/Kg	☼	10/01/12 08:45	10/02/12 07:31	1
Cadmium	5000		26	6.5	mg/Kg	☼	10/01/12 08:45	10/02/12 10:39	100
Lead	120000	B	66	23	mg/Kg	☼	10/01/12 08:45	10/02/12 10:39	100

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# Client Sample Results

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

**Client Sample ID: ECH-S-IRM1-HW-D4 WEST WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50703-10**

**Date Collected: 09/28/12 10:00**

**Matrix: Solid**

**Date Received: 09/28/12 16:31**

**Percent Solids: 73.2**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	390		1.2	0.27	mg/Kg	☼	10/01/12 08:45	10/02/12 07:37	1
Cadmium	5400		25	6.1	mg/Kg	☼	10/01/12 08:45	10/02/12 10:43	100
Lead	130000	B	62	21	mg/Kg	☼	10/01/12 08:45	10/02/12 10:43	100

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# Client Sample Results

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

**Client Sample ID: ECH-S-IRM1-HW-D4 FLOOR (2-2.5 FT BGS)**

**Lab Sample ID: 500-50703-11**

Date Collected: 09/28/12 10:05

Matrix: Solid

Date Received: 09/28/12 16:31

Percent Solids: 49.2

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	8.9		1.9	0.42	mg/Kg	☼	10/01/12 08:45	10/02/12 07:43	1
Cadmium	380		0.38	0.095	mg/Kg	☼	10/01/12 08:45	10/02/12 07:43	1
Lead	1500	B	0.95	0.33	mg/Kg	☼	10/01/12 08:45	10/02/12 07:43	1

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# Client Sample Results

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

**Client Sample ID: ECH-S-IRM1-HW-D5 (0-2 FT BGS)**

**Lab Sample ID: 500-50703-12**

Date Collected: 09/28/12 11:50

Matrix: Solid

Date Received: 09/28/12 16:31

Percent Solids: 80.2

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	72		1.1	0.25	mg/Kg	✱	10/01/12 08:45	10/02/12 07:50	1
Cadmium	360		0.23	0.056	mg/Kg	✱	10/01/12 08:45	10/02/12 07:50	1
Lead	7100	B	11	3.9	mg/Kg	✱	10/01/12 08:45	10/02/12 10:47	20

# Client Sample Results

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

**Client Sample ID: ECH-S-IRM1-HW-D6 (0-2 FT BGS)**

**Lab Sample ID: 500-50703-13**

**Date Collected: 09/28/12 12:40**

**Matrix: Solid**

**Date Received: 09/28/12 16:31**

**Percent Solids: 77.7**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	52		1.1	0.23	mg/Kg	✱	10/01/12 08:45	10/02/12 07:56	1
Cadmium	190		0.21	0.053	mg/Kg	✱	10/01/12 08:45	10/02/12 07:56	1
Lead	1500	B	0.54	0.18	mg/Kg	✱	10/01/12 08:45	10/02/12 07:56	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

**Client Sample ID: ECH-S-IRM1-HW-G1 (0-2 FT BGS)**

**Lab Sample ID: 500-50703-14**

Date Collected: 09/27/12 17:00

Matrix: Solid

Date Received: 09/28/12 16:31

Percent Solids: 81.7

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	23		1.1	0.25	mg/Kg	☼	10/01/12 08:45	10/02/12 08:19	1
Cadmium	12		0.23	0.056	mg/Kg	☼	10/01/12 08:45	10/02/12 08:19	1
Lead	520	B	0.57	0.20	mg/Kg	☼	10/01/12 08:45	10/02/12 08:19	1

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# Definitions/Glossary

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
V	Serial Dilution exceeds the control limits
F	Duplicate RPD exceeds the control limit
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
F	RPD of the MS and MSD exceeds the control limits

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

## Metals

### Prep Batch: 164260

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50703-1	ECH-S-IRM1-HW-D3 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50703-2	ECH-S-IRM1-HW-D3 NORTH WALL (0-2 FT BGS) DU	Total/NA	Solid	3050B	
500-50703-3	ECH-S-IRM1-HW-D3 SOUTH WALL (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50703-4	ECH-S-IRM1-HW-D3 EAST WALL (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50703-5	ECH-S-IRM1-HW-D3 WEST WALL (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50703-6	ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	3050B	
500-50703-6 DU	ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	3050B	
500-50703-6 MS	ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	3050B	
500-50703-6 MSD	ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	3050B	
500-50703-7	ECH-S-IRM1-HW-D4 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50703-8	ECH-S-IRM1-HW-D4 SOUTH WALL (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50703-9	ECH-S-IRM1-HW-D4 EAST WALL (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50703-10	ECH-S-IRM1-HW-D4 WEST WALL (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50703-11	ECH-S-IRM1-HW-D4 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	3050B	
500-50703-12	ECH-S-IRM1-HW-D5 (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50703-13	ECH-S-IRM1-HW-D6 (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50703-14	ECH-S-IRM1-HW-G1 (0-2 FT BGS)	Total/NA	Solid	3050B	
LCS 500-164260/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-164260/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 164401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50703-1	ECH-S-IRM1-HW-D3 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-2	ECH-S-IRM1-HW-D3 NORTH WALL (0-2 FT BGS) DU	Total/NA	Solid	6010B	164260
500-50703-3	ECH-S-IRM1-HW-D3 SOUTH WALL (0-2 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-4	ECH-S-IRM1-HW-D3 EAST WALL (0-2 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-5	ECH-S-IRM1-HW-D3 WEST WALL (0-2 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-6	ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-6 DU	ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-6 MS	ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-6 MSD	ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-7	ECH-S-IRM1-HW-D4 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-8	ECH-S-IRM1-HW-D4 SOUTH WALL (0-2 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-9	ECH-S-IRM1-HW-D4 EAST WALL (0-2 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-10	ECH-S-IRM1-HW-D4 WEST WALL (0-2 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-11	ECH-S-IRM1-HW-D4 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-12	ECH-S-IRM1-HW-D5 (0-2 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-13	ECH-S-IRM1-HW-D6 (0-2 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-14	ECH-S-IRM1-HW-G1 (0-2 FT BGS)	Total/NA	Solid	6010B	164260
LCS 500-164260/2-A	Lab Control Sample	Total/NA	Solid	6010B	164260
MB 500-164260/1-A	Method Blank	Total/NA	Solid	6010B	164260

### Analysis Batch: 164446

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50703-4	ECH-S-IRM1-HW-D3 EAST WALL (0-2 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-5	ECH-S-IRM1-HW-D3 WEST WALL (0-2 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-6	ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-6 DU	ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-6 MS	ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-6 MSD	ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-7	ECH-S-IRM1-HW-D4 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	6010B	164260

TestAmerica Chicago

# QC Association Summary

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

## Metals (Continued)

### Analysis Batch: 164446 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50703-8	ECH-S-IRM1-HW-D4 SOUTH WALL (0-2 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-9	ECH-S-IRM1-HW-D4 EAST WALL (0-2 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-10	ECH-S-IRM1-HW-D4 WEST WALL (0-2 FT BGS)	Total/NA	Solid	6010B	164260
500-50703-12	ECH-S-IRM1-HW-D5 (0-2 FT BGS)	Total/NA	Solid	6010B	164260

## General Chemistry

### Analysis Batch: 164225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50703-1	ECH-S-IRM1-HW-D3 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50703-2	ECH-S-IRM1-HW-D3 NORTH WALL (0-2 FT BGS) DU	Total/NA	Solid	Moisture	
500-50703-3	ECH-S-IRM1-HW-D3 SOUTH WALL (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50703-4	ECH-S-IRM1-HW-D3 EAST WALL (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50703-5	ECH-S-IRM1-HW-D3 WEST WALL (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50703-6	ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	Moisture	
500-50703-6 MS	ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	Moisture	
500-50703-6 MSD	ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	Moisture	
500-50703-7	ECH-S-IRM1-HW-D4 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50703-8	ECH-S-IRM1-HW-D4 SOUTH WALL (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50703-9	ECH-S-IRM1-HW-D4 EAST WALL (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50703-10	ECH-S-IRM1-HW-D4 WEST WALL (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50703-11	ECH-S-IRM1-HW-D4 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	Moisture	
500-50703-12	ECH-S-IRM1-HW-D5 (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50703-13	ECH-S-IRM1-HW-D6 (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50703-14	ECH-S-IRM1-HW-G1 (0-2 FT BGS)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-164260/1-A**  
**Matrix: Solid**  
**Analysis Batch: 164401**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 164260**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		10/01/12 08:45	10/02/12 05:39	1
Cadmium	ND		0.20	0.050	mg/Kg		10/01/12 08:45	10/02/12 05:39	1
Lead	1.07		0.50	0.17	mg/Kg		10/01/12 08:45	10/02/12 05:39	1

**Lab Sample ID: LCS 500-164260/2-A**  
**Matrix: Solid**  
**Analysis Batch: 164401**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 164260**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	8.87		mg/Kg		89	80 - 120
Cadmium	5.00	4.54		mg/Kg		91	80 - 120
Lead	10.0	9.76		mg/Kg		98	80 - 120

**Lab Sample ID: 500-50703-6 MS**  
**Matrix: Solid**  
**Analysis Batch: 164401**

**Client Sample ID: ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)**  
**Prep Type: Total/NA**  
**Prep Batch: 164260**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	270	V	10.7	519	4	mg/Kg	✱	2311	75 - 125
Cadmium	82	V	5.33	139	4	mg/Kg	✱	1071	75 - 125

**Lab Sample ID: 500-50703-6 MS**  
**Matrix: Solid**  
**Analysis Batch: 164446**

**Client Sample ID: ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)**  
**Prep Type: Total/NA**  
**Prep Batch: 164260**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	7200	B	10.7	20600	4	mg/Kg	✱	12514	75 - 125

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**Lab Sample ID: 500-50703-6 MSD**  
**Matrix: Solid**  
**Analysis Batch: 164401**

**Client Sample ID: ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)**  
**Prep Type: Total/NA**  
**Prep Batch: 164260**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Arsenic	270	V	11.4	402	4 F	mg/Kg	✱	1137	75 - 125	25	20
Cadmium	82	V	5.69	82.0	4 F	mg/Kg	✱	-2	75 - 125	52	20

**Lab Sample ID: 500-50703-6 MSD**  
**Matrix: Solid**  
**Analysis Batch: 164446**

**Client Sample ID: ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)**  
**Prep Type: Total/NA**  
**Prep Batch: 164260**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Lead	7200	B	11.4	5330	4 F	mg/Kg	✱	-1691	75 - 125	118	20

4

# QC Sample Results

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

## Method: 6010B - Metals (ICP) (Continued)

**Lab Sample ID: 500-50703-6 DU**  
**Matrix: Solid**  
**Analysis Batch: 164401**

**Client Sample ID: ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)**  
**Prep Type: Total/NA**  
**Prep Batch: 164260**

Analyte	Sample Result	Sample Qualifier	DU		Unit	D	RPD	Limit
			Result	Qualifier				
Arsenic	270	V	211	F	mg/Kg	☼	25	20
Cadmium	82	V	58.9	F	mg/Kg	☼	33	20

**Lab Sample ID: 500-50703-6 DU**  
**Matrix: Solid**  
**Analysis Batch: 164446**

**Client Sample ID: ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)**  
**Prep Type: Total/NA**  
**Prep Batch: 164260**

Analyte	Sample Result	Sample Qualifier	DU		Unit	D	RPD	Limit
			Result	Qualifier				
Lead	7200	B	8880		mg/Kg	☼	20	20

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

# Lab Chronicle

Client: URS Corporation  
Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

## Client Sample ID: ECH-S-IRM1-HW-D3 NORTH WALL (0-2 FT BGS)

Lab Sample ID: 500-50703-1

Date Collected: 09/28/12 08:15

Matrix: Solid

Date Received: 09/28/12 16:31

Percent Solids: 80.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164260	10/01/12 08:45	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164401	10/02/12 05:52	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164225	09/29/12 08:47	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-D3 NORTH WALL (0-2 FT BGS) DUP

Lab Sample ID: 500-50703-2

Date Collected: 09/28/12 08:15

Matrix: Solid

Date Received: 09/28/12 16:31

Percent Solids: 79.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164260	10/01/12 08:45	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164401	10/02/12 05:58	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164225	09/29/12 08:47	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-D3 SOUTH WALL (0-2 FT BGS)

Lab Sample ID: 500-50703-3

Date Collected: 09/28/12 08:20

Matrix: Solid

Date Received: 09/28/12 16:31

Percent Solids: 82.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164260	10/01/12 08:45	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164401	10/02/12 06:04	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164225	09/29/12 08:47	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-D3 EAST WALL (0-2 FT BGS)

Lab Sample ID: 500-50703-4

Date Collected: 09/28/12 08:25

Matrix: Solid

Date Received: 09/28/12 16:31

Percent Solids: 80.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164260	10/01/12 08:45	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164401	10/02/12 06:10	TDS	TAL CHI
Total/NA	Analysis	6010B		20	164446	10/02/12 09:54	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164225	09/29/12 08:47	CMV	TAL CHI

# Lab Chronicle

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

## Client Sample ID: ECH-S-IRM1-HW-D3 WEST WALL (0-2 FT BGS)

Lab Sample ID: 500-50703-5

Date Collected: 09/28/12 08:30  
 Date Received: 09/28/12 16:31

Matrix: Solid  
 Percent Solids: 79.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164260	10/01/12 08:45	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164401	10/02/12 06:16	TDS	TAL CHI
Total/NA	Analysis	6010B		20	164446	10/02/12 09:58	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164225	09/29/12 08:47	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-D3 FLOOR (2-2.5 FT BGS)

Lab Sample ID: 500-50703-6

Date Collected: 09/28/12 08:35  
 Date Received: 09/28/12 16:31

Matrix: Solid  
 Percent Solids: 79.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164260	10/01/12 08:45	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164401	10/02/12 06:23	TDS	TAL CHI
Total/NA	Analysis	6010B		20	164446	10/02/12 10:02	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164225	09/29/12 08:47	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-D4 NORTH WALL (0-2 FT BGS)

Lab Sample ID: 500-50703-7

Date Collected: 09/28/12 09:45  
 Date Received: 09/28/12 16:31

Matrix: Solid  
 Percent Solids: 74.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164260	10/01/12 08:45	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164401	10/02/12 07:18	TDS	TAL CHI
Total/NA	Analysis	6010B		100	164446	10/02/12 10:31	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164225	09/29/12 08:47	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-D4 SOUTH WALL (0-2 FT BGS)

Lab Sample ID: 500-50703-8

Date Collected: 09/28/12 09:50  
 Date Received: 09/28/12 16:31

Matrix: Solid  
 Percent Solids: 75.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164260	10/01/12 08:45	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164401	10/02/12 07:25	TDS	TAL CHI
Total/NA	Analysis	6010B		100	164446	10/02/12 10:35	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164225	09/29/12 08:47	CMV	TAL CHI

# Lab Chronicle

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

**Client Sample ID: ECH-S-IRM1-HW-D4 EAST WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50703-9**

Date Collected: 09/28/12 09:55  
 Date Received: 09/28/12 16:31

Matrix: Solid  
 Percent Solids: 75.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164260	10/01/12 08:45	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164401	10/02/12 07:31	TDS	TAL CHI
Total/NA	Analysis	6010B		100	164446	10/02/12 10:39	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164225	09/29/12 08:47	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-HW-D4 WEST WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50703-10**

Date Collected: 09/28/12 10:00  
 Date Received: 09/28/12 16:31

Matrix: Solid  
 Percent Solids: 73.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164260	10/01/12 08:45	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164401	10/02/12 07:37	TDS	TAL CHI
Total/NA	Analysis	6010B		100	164446	10/02/12 10:43	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164225	09/29/12 08:47	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-HW-D4 FLOOR (2-2.5 FT BGS)**

**Lab Sample ID: 500-50703-11**

Date Collected: 09/28/12 10:05  
 Date Received: 09/28/12 16:31

Matrix: Solid  
 Percent Solids: 49.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164260	10/01/12 08:45	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164401	10/02/12 07:43	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164225	09/29/12 08:47	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-HW-D5 (0-2 FT BGS)**

**Lab Sample ID: 500-50703-12**

Date Collected: 09/28/12 11:50  
 Date Received: 09/28/12 16:31

Matrix: Solid  
 Percent Solids: 80.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164260	10/01/12 08:45	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164401	10/02/12 07:50	TDS	TAL CHI
Total/NA	Analysis	6010B		20	164446	10/02/12 10:47	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164225	09/29/12 08:47	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-HW-D6 (0-2 FT BGS)**

**Lab Sample ID: 500-50703-13**

Date Collected: 09/28/12 12:40  
 Date Received: 09/28/12 16:31

Matrix: Solid  
 Percent Solids: 77.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164260	10/01/12 08:45	LAH	TAL CHI

TestAmerica Chicago

# Lab Chronicle

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

## Client Sample ID: ECH-S-IRM1-HW-D6 (0-2 FT BGS)

Lab Sample ID: 500-50703-13

Date Collected: 09/28/12 12:40

Matrix: Solid

Date Received: 09/28/12 16:31

Percent Solids: 77.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	6010B		1	164401	10/02/12 07:56	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164225	09/29/12 08:47	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-G1 (0-2 FT BGS)

Lab Sample ID: 500-50703-14

Date Collected: 09/27/12 17:00

Matrix: Solid

Date Received: 09/28/12 16:31

Percent Solids: 81.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164260	10/01/12 08:45	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164401	10/02/12 08:19	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164225	09/29/12 08:47	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Certification Summary

Client: URS Corporation  
 Project/Site: CMS Soil Sampling 4/12

TestAmerica Job ID: 500-50703-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAP	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAP	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAP	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAP	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAP	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAP	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13

### Chain of Custody Record

TestAmerica Laborator

<b>Client Contact</b> Wanda Davis - URS Corp. ADQM Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300 Newark, DE 19713 (302) 781-5892 (302) 781-5901 Fax Project Name: CMS Soil Sampling 4/12 Site Location: DuPont East Chicago, Indiana PO#: LBIO-65636, Client Project#: 9267-7720100C-WHO650794		<b>Project Manager: Randy Palachek</b> Tel/Fax: 512.719.6006		<b>Site Contact: Keith Thompson</b> Lab Contact: Richard Wright		<b>Date: 18 September 2012</b> Carrier: TA Courier		COC No: 1 of 2 CO Job No. <b>500-50703</b> SDG No.	
<b>Analysis Turnaround Time</b> Calendar (C) or Work Days (W) TAT if different from Below 48-Hr TAT <input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input checked="" type="checkbox"/> 2 days <input type="checkbox"/> 1 day		<b>Sample Identification</b>		<b>Sample Date</b>	<b>Sample Time</b>	<b>Sample Type</b>	<b>Matrix</b>	<b># of Cont.</b>	<b>Filtered Sample</b> As, Pb, Cd
1	EH-S-IRM1-HW-D3 North Wall (0-2 ft bgs)	9/28/2012	815	Composite	SOIL	1	N	X	
2	EH-S-IRM1-HW-D3 North Wall (0-2 ft bgs) Dup	9/28/2012	815	Composite	SOIL	1	N	X	
3	EH-S-IRM1-HW-D3 South Wall (0-2 ft bgs)	9/28/2012	820	Composite	SOIL	1	N	X	
4	EH-S-IRM1-HW-D3 East Wall (0-2 ft bgs)	9/28/2012	825	Composite	SOIL	1	N	X	
5	EH-S-IRM1-HW-D3 West Wall (0-2 ft bgs)	9/28/2012	830	Composite	SOIL	1	N	X	
6	EH-S-IRM1-HW-D3 Floor	9/28/2012	835	Composite	SOIL	1	N	X	
	EH-S-IRM1-HW-D3 Floor-MS	9/28/2012	835	Composite	SOIL	1	N	X	
	EH-S-IRM1-HW-D3 Floor-MSD	9/28/2012	835	Composite	SOIL	1	N	X	
7	EH-S-IRM1-HW-D4 North Wall (0-2 ft bgs)	9/28/2012	945	Composite	SOIL	1	N	X	
8	EH-S-IRM1-HW-D4 South Wall (0-2 ft bgs)	9/28/2012	950	Composite	SOIL	1	N	X	
9	EH-S-IRM1-HW-D4 East Wall (0-2 ft bgs)	9/28/2012	955	Composite	SOIL	1	N	X	
10	EH-S-IRM1-HW-D4 West Wall (0-2 ft bgs)	9/28/2012	1000	Composite	SOIL	1	N	X	
<b>Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other</b>		<b>Possible Hazard Identification</b> <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown		<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b> <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
<b>Special Instructions/QC Requirements &amp; Comments:</b> <p style="text-align: center;">48 hr TAT</p>									
Relinquished by: <i>[Signature]</i>		Company: <i>Parsons</i>		Date/Time: <i>9-28/1531</i>		Received by: <i>[Signature]</i>		Company: <i>TA</i>	
Relinquished by: <i>[Signature]</i>		Company: <i>TA</i>		Date/Time: <i>9/28/1719</i>		Received by: <i>[Signature]</i>		Company: <i>TA</i>	
Relinquished by:		Company:		Date/Time:		Received by:		Company:	



Chicago  
2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

### Chain of Custody Record



TestAmerica Laboratory

Client Contact Wanda Davis - URS Corp. ADQM Iron Hill Corporate Center, 4051 Oglethorpe Road, Suite 300 Newark, DE 19713 (302) 781-5892 (302) 781-5901 Fax Project Name: CMS Soil Sampling 4/12 Site Location: DuPont East Chicago, Indiana PO#: LBI0-65636, Client Project#: 9267-7720100C-WHO660794		Project Manager: Randy Palachek Tel/Fax: 512.719.6006		Site Contact: Keith Thompson Lab Contact: Richard Wright		Date: 18 September 2012 Carrier: TA Courier		COC No: 1 of 2 CO Job No. SDG No.		
Analysis Turnaround Time Calendar (C) or Work Days (W) TAT if different from Below 48-Hr TAT <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Sample Identification		Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample As, Pb, Cd	Sample Specific N
ECH EHS-IRM1-HW-D3 North Wall (0-2 ft bgs)		9/28/2012	815	Composite	SOIL	1	N	X		
ECH EHS-IRM1-HW-D3 North Wall (0-2 ft bgs) Dup		9/28/2012	815	Composite	SOIL	1	N	X		
ECH EHS-IRM1-HW-D3 South Wall (0-2 ft bgs)		9/28/2012	820	Composite	SOIL	1	N	X		
ECH EHS-IRM1-HW-D3 East Wall (0-2 ft bgs)		9/28/2012	825	Composite	SOIL	1	N	X		
ECH EHS-IRM1-HW-D3 West Wall (0-2 ft bgs)		9/28/2012	830	Composite	SOIL	1	N	X		
ECH EHS-IRM1-HW-D3 Floor		9/28/2012	835	Composite	SOIL	1	N	X		
ECH EHS-IRM1-HW-D3 Floor-MS		9/28/2012	835	Composite	SOIL	1	N	X		
ECH EHS-IRM1-HW-D3 Floor-MSD		9/28/2012	835	Composite	SOIL	1	N	X		
ECH EHS-IRM1-HW-D4 North Wall (0-2 ft bgs)		9/28/2012	945	Composite	SOIL	1	N	X		
ECH EHS-IRM1-HW-D4 South Wall (0-2 ft bgs)		9/28/2012	950	Composite	SOIL	1	N	X		
ECH EHS-IRM1-HW-D4 East Wall (0-2 ft bgs)		9/28/2012	955	Composite	SOIL	1	N	X		
ECH EHS-IRM1-HW-D4 West Wall (0-2 ft bgs)		9/28/2012	1000	Composite	SOIL	1	N	X		
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other		Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months						
Special Instructions/QC Requirements & Comments: <p style="text-align: center;">70 hr TAT</p>										
Relinquished by: <i>N. Dean</i>		Company: Parsons		Date/Time: 9-28/1620		Received by:		Company:		Date/Time:
Relinquished by:		Company:		Date/Time:		Received by:		Company:		Date/Time:
Relinquished by:		Company:		Date/Time:		Received by:		Company:		Date/Time:



Chicago  
2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

### Chain of Custody Record



TestAmerica Laborator

<b>Client Contact</b> Wanda Davis - URS Corp. ADQM Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300 Newark, DE 19713 (302) 781-5892 (302) 781-5901 Fax Project Name: CMS Soil Sampling 4/12 Site Location: DuPont East Chicago, Indiana PO#: LBIO-85638, Client Project#: 9287-772010QC-VWHO650794	<b>Project Manager: Randy Palachek</b> Tel/Fax: 512.719.6006	<b>Site Contact: Keith Thompson</b> Lab Contact: Richard Wright	<b>Date: 28 September 2012</b> Carrier: TA Courier	<b>COC No:</b> 1 of 2 CO  Job No: <b>500-50703</b> SDG No: <b>Revision</b>
---	---	--	---	--

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Initials	Sample	As. Pkg. Cf	Sample Specific N
<i>ECH</i> EH-S-IRM1-HW-D3 North Wall (0-2 ft bgs)	9/28/2012	815	Composite	SOIL	1	N	X		
<i>ECH</i> EH-S-IRM1-HW-D3 North Wall (0-2 ft bgs) Dup	9/28/2012	815	Composite	SOIL	1	N	X		
<i>ECH</i> EH-S-IRM1-HW-D3 South Wall (0-2 ft bgs)	9/28/2012	820	Composite	SOIL	1	N	X		
<i>ECH</i> EH-S-IRM1-HW-D3 East Wall (0-2 ft bgs)	9/28/2012	825	Composite	SOIL	1	N	X		
<i>ECH</i> EH-S-IRM1-HW-D3 West Wall (0-2 ft bgs)	9/28/2012	830	Composite	SOIL	1	N	X		
<i>ECH</i> EH-S-IRM1-HW-D3 Floor (2-2.5 ft bgs)	9/28/2012	835	Composite	SOIL	1	N	X		
<i>ECH</i> EH-S-IRM1-HW-D3 Floor-MS (2-2.5 ft bgs) MS	9/28/2012	835	Composite	SOIL	1	N	X		
<i>ECH</i> EH-S-IRM1-HW-D3 Floor-MSD (2-2.5 ft bgs) MSD	9/28/2012	835	Composite	SOIL	1	N	X		
<i>ECH</i> EH-S-IRM1-HW-D4 North Wall (0-2 ft bgs)	9/28/2012	945	Composite	SOIL	1	N	X		
<i>ECH</i> EH-S-IRM1-HW-D4 South Wall (0-2 ft bgs)	9/28/2012	950	Composite	SOIL	1	N	X		
<i>ECH</i> EH-S-IRM1-HW-D4 East Wall (0-2 ft bgs)	9/28/2012	955	Composite	SOIL	1	N	X		
<i>ECH</i> EH-S-IRM1-HW-D4 West Wall (0-2 ft bgs)	9/28/2012	1000	Composite	SOIL	1	N	X		

Preservation Used: 1=Ice, 2=HCl; 3=H2SO4; 4=HNO3; 5=NaOH; 6=Other

Possible Hazard Identification:  
 Non-Hazard     Flammable     Skin Irritant     Poison B     Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month):  
 Return To Client     Disposal By Lab     Archive For \_\_\_\_\_ Months

Special Instructions/QC Requirements & Comments:  
 48 hr TAT

Relinquished by: <i>N. Dean</i>	Company: Parsons	Date/Time: 9-28-12 16:30	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:





## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-50703-1

**Login Number: 50703**

**List Number: 1**

**Creator: Lunt, Jeff T**

**List Source: TestAmerica Chicago**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	1.4
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-50798-1  
Client Project/Site: IRM Sampling  
Revision: 1

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
10/8/2012 3:08:21 PM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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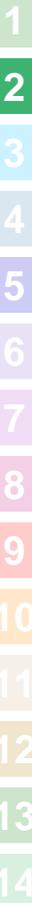
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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50798-1

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**Job ID: 500-50798-1**

---

**Laboratory: TestAmerica Chicago**

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**Narrative**

---

**Job Narrative**  
**500-50798-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 10/3/2012 7:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.4° C.

Except:

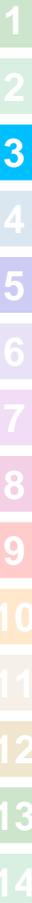
Revised Report: Sample 2 and its duplicate are off by more than 20% RPD. Client requested reanalysis for 6010.

**Metals**

Method(s) 6010B: The matrix duplicate %RPD for 500-50798-2 was outside the control limits for Cd.

Method(s) 6010B: The matrix spike / matrix spike duplicate (MS/MSD) precision for sample 500-50798-2 was outside control limits for As and Cd. Please note that the analyte present in the original sample is 4 times greater than the matrix spike/matrix spike duplicate concentration; therefore, control limits are not applicable.

No other analytical or quality issues were noted.



# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50798-1

## Client Sample ID: ECH-S-IRM1-HW-E3 (0-2 FT BGS)

Lab Sample ID: 500-50798-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	21		1.2	0.26	mg/Kg	1	☼	6010B	Total/NA
Cadmium	10		0.24	0.059	mg/Kg	1	☼	6010B	Total/NA
Lead	1100	B	0.59	0.20	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-F1 (0-2 FT BGS)

Lab Sample ID: 500-50798-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	91		1.1	0.23	mg/Kg	1	☼	6010B	Total/NA
Cadmium	58		0.21	0.053	mg/Kg	1	☼	6010B	Total/NA
Lead	3100		0.54	0.18	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-F2 (0-2 FT BGS)

Lab Sample ID: 500-50798-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	9.0		1.0	0.23	mg/Kg	1	☼	6010B	Total/NA
Cadmium	41		0.21	0.052	mg/Kg	1	☼	6010B	Total/NA
Lead	3300	B	0.52	0.18	mg/Kg	1	☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50798-1

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Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

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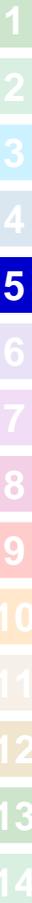
**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50798-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-50798-1	ECH-S-IRM1-HW-E3 (0-2 FT BGS)	Solid	10/02/12 10:30	10/03/12 07:00
500-50798-2	ECH-S-IRM1-HW-F1 (0-2 FT BGS)	Solid	10/02/12 10:45	10/03/12 07:00
500-50798-3	ECH-S-IRM1-HW-F2 (0-2 FT BGS)	Solid	10/02/12 11:00	10/03/12 07:00

- 1
- 2
- 3
- 4
- 5
- 6
- 7
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- 10
- 11
- 12
- 13
- 14

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50798-1

**Client Sample ID: ECH-S-IRM1-HW-E3 (0-2 FT BGS)**

**Lab Sample ID: 500-50798-1**

Date Collected: 10/02/12 10:30

Matrix: Solid

Date Received: 10/03/12 07:00

Percent Solids: 73.8

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	21		1.2	0.26	mg/Kg	✱	10/03/12 09:20	10/03/12 21:44	1
Cadmium	10		0.24	0.059	mg/Kg	✱	10/03/12 09:20	10/03/12 21:44	1
Lead	1100	B	0.59	0.20	mg/Kg	✱	10/03/12 09:20	10/03/12 21:44	1

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50798-1

**Client Sample ID: ECH-S-IRM1-HW-F1 (0-2 FT BGS)**

**Lab Sample ID: 500-50798-2**

**Date Collected: 10/02/12 10:45**

**Matrix: Solid**

**Date Received: 10/03/12 07:00**

**Percent Solids: 90.6**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	91		1.1	0.23	mg/Kg	✱	10/05/12 16:30	10/06/12 14:10	1
Cadmium	58		0.21	0.053	mg/Kg	✱	10/05/12 16:30	10/06/12 14:10	1
Lead	3100		0.54	0.18	mg/Kg	✱	10/05/12 16:30	10/06/12 14:10	1

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50798-1

**Client Sample ID: ECH-S-IRM1-HW-F2 (0-2 FT BGS)**

**Lab Sample ID: 500-50798-3**

Date Collected: 10/02/12 11:00

Matrix: Solid

Date Received: 10/03/12 07:00

Percent Solids: 80.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	9.0		1.0	0.23	mg/Kg	✱	10/03/12 09:20	10/04/12 07:34	1
Cadmium	41		0.21	0.052	mg/Kg	✱	10/03/12 09:20	10/04/12 07:34	1
Lead	3300	B	0.52	0.18	mg/Kg	✱	10/03/12 09:20	10/04/12 07:34	1

# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50798-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
F	Duplicate RPD exceeds the control limit
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
F	RPD of the MS and MSD exceeds the control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50798-1

## Metals

### Prep Batch: 164524

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50798-1	ECH-S-IRM1-HW-E3 (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50798-3	ECH-S-IRM1-HW-F2 (0-2 FT BGS)	Total/NA	Solid	3050B	
LCS 500-164524/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-164524/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 164668

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50798-1	ECH-S-IRM1-HW-E3 (0-2 FT BGS)	Total/NA	Solid	6010B	164524
LCS 500-164524/2-A	Lab Control Sample	Total/NA	Solid	6010B	164524
MB 500-164524/1-A	Method Blank	Total/NA	Solid	6010B	164524

### Analysis Batch: 164686

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50798-3	ECH-S-IRM1-HW-F2 (0-2 FT BGS)	Total/NA	Solid	6010B	164524

### Prep Batch: 164930

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50798-2	ECH-S-IRM1-HW-F1 (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50798-2 DU	ECH-S-IRM1-HW-F1 (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50798-2 MS	ECH-S-IRM1-HW-F1 (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50798-2 MSD	ECH-S-IRM1-HW-F1 (0-2 FT BGS)	Total/NA	Solid	3050B	
LCS 500-164930/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-164930/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 165010

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50798-2	ECH-S-IRM1-HW-F1 (0-2 FT BGS)	Total/NA	Solid	6010B	164930
500-50798-2 DU	ECH-S-IRM1-HW-F1 (0-2 FT BGS)	Total/NA	Solid	6010B	164930
500-50798-2 MS	ECH-S-IRM1-HW-F1 (0-2 FT BGS)	Total/NA	Solid	6010B	164930
500-50798-2 MSD	ECH-S-IRM1-HW-F1 (0-2 FT BGS)	Total/NA	Solid	6010B	164930
LCS 500-164930/2-A	Lab Control Sample	Total/NA	Solid	6010B	164930
MB 500-164930/1-A	Method Blank	Total/NA	Solid	6010B	164930

## General Chemistry

### Analysis Batch: 164528

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50798-1	ECH-S-IRM1-HW-E3 (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50798-2	ECH-S-IRM1-HW-F1 (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50798-3	ECH-S-IRM1-HW-F2 (0-2 FT BGS)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50798-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-164524/1-A**  
**Matrix: Solid**  
**Analysis Batch: 164668**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 164524**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		10/03/12 09:20	10/03/12 20:15	1
Cadmium	ND		0.20	0.050	mg/Kg		10/03/12 09:20	10/03/12 20:15	1
Lead	0.244	J	0.50	0.17	mg/Kg		10/03/12 09:20	10/03/12 20:15	1

**Lab Sample ID: LCS 500-164524/2-A**  
**Matrix: Solid**  
**Analysis Batch: 164668**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 164524**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.58		mg/Kg		96	80 - 120
Cadmium	5.00	5.03		mg/Kg		101	80 - 120
Lead	10.0	10.3		mg/Kg		103	80 - 120

**Lab Sample ID: MB 500-164930/1-A**  
**Matrix: Solid**  
**Analysis Batch: 165010**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 164930**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		10/05/12 16:30	10/06/12 12:41	1
Cadmium	ND		0.20	0.050	mg/Kg		10/05/12 16:30	10/06/12 12:41	1
Lead	ND		0.50	0.17	mg/Kg		10/05/12 16:30	10/06/12 12:41	1

**Lab Sample ID: LCS 500-164930/2-A**  
**Matrix: Solid**  
**Analysis Batch: 165010**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 164930**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	8.75		mg/Kg		88	80 - 120
Cadmium	5.00	4.45		mg/Kg		89	80 - 120
Lead	10.0	9.48		mg/Kg		95	80 - 120

**Lab Sample ID: 500-50798-2 MS**  
**Matrix: Solid**  
**Analysis Batch: 165010**

**Client Sample ID: ECH-S-IRM1-HW-F1 (0-2 FT BGS)**  
**Prep Type: Total/NA**  
**Prep Batch: 164930**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	91		10.9	97.7	4	mg/Kg	☼	62	75 - 125
Cadmium	58		5.43	37.1	4	mg/Kg	☼	-381	75 - 125
Lead	3100		10.9	3070	4	mg/Kg	☼	-17	75 - 125

**Lab Sample ID: 500-50798-2 MSD**  
**Matrix: Solid**  
**Analysis Batch: 165010**

**Client Sample ID: ECH-S-IRM1-HW-F1 (0-2 FT BGS)**  
**Prep Type: Total/NA**  
**Prep Batch: 164930**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	91		10.1	178	4 F	mg/Kg	☼	869	75 - 125	59	20
Cadmium	58		5.04	71.0	4 F	mg/Kg	☼	262	75 - 125	63	20
Lead	3100		10.1	3430	4	mg/Kg	☼	3567	75 - 125	11	20

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50798-1

## Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: 500-50798-2 DU

Matrix: Solid

Analysis Batch: 165010

Client Sample ID: ECH-S-IRM1-HW-F1 (0-2 FT BGS)

Prep Type: Total/NA

Prep Batch: 164930

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Arsenic	91		87.1		mg/Kg	⊛	4	20
Cadmium	58		73.2	F	mg/Kg	⊛	24	20
Lead	3100		3130		mg/Kg	⊛	2	20

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50798-1

## Client Sample ID: ECH-S-IRM1-HW-E3 (0-2 FT BGS)

Lab Sample ID: 500-50798-1

Date Collected: 10/02/12 10:30

Matrix: Solid

Date Received: 10/03/12 07:00

Percent Solids: 73.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164524	10/03/12 09:20	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164668	10/03/12 21:44	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164528	10/03/12 09:26	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-F1 (0-2 FT BGS)

Lab Sample ID: 500-50798-2

Date Collected: 10/02/12 10:45

Matrix: Solid

Date Received: 10/03/12 07:00

Percent Solids: 90.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164930	10/05/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	165010	10/06/12 14:10	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164528	10/03/12 09:26	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-F2 (0-2 FT BGS)

Lab Sample ID: 500-50798-3

Date Collected: 10/02/12 11:00

Matrix: Solid

Date Received: 10/03/12 07:00

Percent Solids: 80.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164524	10/03/12 09:20	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164686	10/04/12 07:34	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	164528	10/03/12 09:26	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-50798-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-12
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13





## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-50798-1

**Login Number: 50798**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Lunt, Jeff T**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	3.1
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-50850-1  
Client Project/Site: IRM Sampling  
Revision: 1

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
12/21/2012 11:09:29 AM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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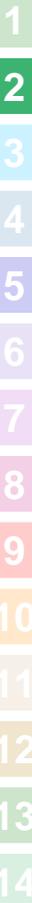
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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50850-1

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**Job ID: 500-50850-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

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**Job Narrative**  
**500-50850-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 10/3/2012 3:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.8° C.

**Revised Report**

Sample ID changes made by Parsons - see amended COCs.

**Metals**

No analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50850-1

## Client Sample ID: ECH-S-IRM1-HW-E2 SIDEWALLS (0-2 FT BGS)

Lab Sample ID: 500-50850-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	5.1		0.99	0.22	mg/Kg	1	☼	6010B	Total/NA
Cadmium	3.2		0.20	0.049	mg/Kg	1	☼	6010B	Total/NA
Lead	660		0.49	0.17	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-E2 FLOOR (2-2.5 FT BGS)

Lab Sample ID: 500-50850-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.0		1.1	0.23	mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.23		0.21	0.053	mg/Kg	1	☼	6010B	Total/NA
Lead	13		0.53	0.18	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D2 (0-2 FT BGS)

Lab Sample ID: 500-50850-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	8.8		1.1	0.23	mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.70		0.21	0.052	mg/Kg	1	☼	6010B	Total/NA
Lead	4.3		0.53	0.18	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D9 (0-2 FT BGS)

Lab Sample ID: 500-50850-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	15		0.96	0.21	mg/Kg	1	☼	6010B	Total/NA
Cadmium	13		0.19	0.048	mg/Kg	1	☼	6010B	Total/NA
Lead	890		0.48	0.17	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-C2 SIDEWALLS (0-2 FT BGS)

Lab Sample ID: 500-50850-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	8.7		0.90	0.20	mg/Kg	1	☼	6010B	Total/NA
Cadmium	2.5		0.18	0.045	mg/Kg	1	☼	6010B	Total/NA
Lead	190		0.45	0.15	mg/Kg	1	☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50850-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

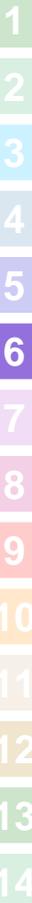
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# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50850-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-50850-1	ECH-S-IRM1-HW-E2 SIDEWALLS (0-2 FT BGS)	Solid	10/03/12 09:45	10/03/12 15:30
500-50850-2	ECH-S-IRM1-HW-E2 FLOOR (2-2.5 FT BGS)	Solid	10/03/12 10:00	10/03/12 15:30
500-50850-3	ECH-S-IRM1-HW-D2 (0-2 FT BGS)	Solid	10/03/12 10:15	10/03/12 15:30
500-50850-4	ECH-S-IRM1-HW-D9 (0-2 FT BGS)	Solid	10/03/12 10:30	10/03/12 15:30
500-50850-5	ECH-S-IRM1-HW-C2 SIDEWALLS (0-2 FT BGS)	Solid	10/03/12 13:45	10/03/12 15:30



# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50850-1

**Client Sample ID: ECH-S-IRM1-HW-E2 SIDEWALLS (0-2 FT BGS)**

**Lab Sample ID: 500-50850-1**

Date Collected: 10/03/12 09:45

Matrix: Solid

Date Received: 10/03/12 15:30

Percent Solids: 95.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.1		0.99	0.22	mg/Kg	☼	10/04/12 09:09	10/04/12 21:47	1
Cadmium	3.2		0.20	0.049	mg/Kg	☼	10/04/12 09:09	10/04/12 21:47	1
Lead	660		0.49	0.17	mg/Kg	☼	10/04/12 09:09	10/04/12 21:47	1

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50850-1

**Client Sample ID: ECH-S-IRM1-HW-E2 FLOOR (2-2.5 FT BGS)**

**Lab Sample ID: 500-50850-2**

**Date Collected: 10/03/12 10:00**

**Matrix: Solid**

**Date Received: 10/03/12 15:30**

**Percent Solids: 85.3**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.0		1.1	0.23	mg/Kg	✱	10/04/12 09:09	10/04/12 21:53	1
Cadmium	0.23		0.21	0.053	mg/Kg	✱	10/04/12 09:09	10/04/12 21:53	1
Lead	13		0.53	0.18	mg/Kg	✱	10/04/12 09:09	10/04/12 21:53	1

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50850-1

**Client Sample ID: ECH-S-IRM1-HW-D2 (0-2 FT BGS)**

**Lab Sample ID: 500-50850-3**

**Date Collected: 10/03/12 10:15**

**Matrix: Solid**

**Date Received: 10/03/12 15:30**

**Percent Solids: 86.4**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	8.8		1.1	0.23	mg/Kg	✱	10/04/12 09:09	10/04/12 22:00	1
Cadmium	0.70		0.21	0.052	mg/Kg	✱	10/04/12 09:09	10/04/12 22:00	1
Lead	4.3		0.53	0.18	mg/Kg	✱	10/04/12 09:09	10/04/12 22:00	1

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50850-1

**Client Sample ID: ECH-S-IRM1-HW-D9 (0-2 FT BGS)**

**Lab Sample ID: 500-50850-4**

Date Collected: 10/03/12 10:30

Matrix: Solid

Date Received: 10/03/12 15:30

Percent Solids: 93.4

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	15		0.96	0.21	mg/Kg	✱	10/04/12 09:09	10/04/12 22:25	1
Cadmium	13		0.19	0.048	mg/Kg	✱	10/04/12 09:09	10/04/12 22:25	1
Lead	890		0.48	0.17	mg/Kg	✱	10/04/12 09:09	10/04/12 22:25	1

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50850-1

**Client Sample ID: ECH-S-IRM1-HW-C2 SIDEWALLS (0-2 FT BGS)**

**Lab Sample ID: 500-50850-5**

Date Collected: 10/03/12 13:45

Matrix: Solid

Date Received: 10/03/12 15:30

Percent Solids: 98.0

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	8.7		0.90	0.20	mg/Kg	☼	10/04/12 09:09	10/04/12 22:31	1
Cadmium	2.5		0.18	0.045	mg/Kg	☼	10/04/12 09:09	10/04/12 22:31	1
Lead	190		0.45	0.15	mg/Kg	☼	10/04/12 09:09	10/04/12 22:31	1

## Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50850-1

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50850-1

## Metals

### Prep Batch: 164692

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50850-1	ECH-S-IRM1-HW-E2 SIDEWALLS (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50850-2	ECH-S-IRM1-HW-E2 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	3050B	
500-50850-3	ECH-S-IRM1-HW-D2 (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50850-4	ECH-S-IRM1-HW-D9 (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50850-5	ECH-S-IRM1-HW-C2 SIDEWALLS (0-2 FT BGS)	Total/NA	Solid	3050B	
LCS 500-164692/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-164692/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 164828

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50850-1	ECH-S-IRM1-HW-E2 SIDEWALLS (0-2 FT BGS)	Total/NA	Solid	6010B	164692
500-50850-2	ECH-S-IRM1-HW-E2 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	6010B	164692
500-50850-3	ECH-S-IRM1-HW-D2 (0-2 FT BGS)	Total/NA	Solid	6010B	164692
500-50850-4	ECH-S-IRM1-HW-D9 (0-2 FT BGS)	Total/NA	Solid	6010B	164692
500-50850-5	ECH-S-IRM1-HW-C2 SIDEWALLS (0-2 FT BGS)	Total/NA	Solid	6010B	164692
LCS 500-164692/2-A	Lab Control Sample	Total/NA	Solid	6010B	164692
MB 500-164692/1-A	Method Blank	Total/NA	Solid	6010B	164692

## General Chemistry

### Analysis Batch: 164630

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50850-1	ECH-S-IRM1-HW-E2 SIDEWALLS (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50850-2	ECH-S-IRM1-HW-E2 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	Moisture	
500-50850-3	ECH-S-IRM1-HW-D2 (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50850-4	ECH-S-IRM1-HW-D9 (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50850-5	ECH-S-IRM1-HW-C2 SIDEWALLS (0-2 FT BGS)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50850-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-164692/1-A**  
**Matrix: Solid**  
**Analysis Batch: 164828**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 164692**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		10/04/12 09:09	10/04/12 21:35	1
Cadmium	ND		0.20	0.050	mg/Kg		10/04/12 09:09	10/04/12 21:35	1
Lead	ND		0.50	0.17	mg/Kg		10/04/12 09:09	10/04/12 21:35	1

**Lab Sample ID: LCS 500-164692/2-A**  
**Matrix: Solid**  
**Analysis Batch: 164828**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 164692**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.22		mg/Kg		92	80 - 120
Cadmium	5.00	4.88		mg/Kg		98	80 - 120
Lead	10.0	9.81		mg/Kg		98	80 - 120



# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50850-1

## Client Sample ID: ECH-S-IRM1-HW-E2 SIDEWALLS (0-2 FT BGS)

Lab Sample ID: 500-50850-1

Date Collected: 10/03/12 09:45

Matrix: Solid

Date Received: 10/03/12 15:30

Percent Solids: 95.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164692	10/04/12 09:09	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164828	10/04/12 21:47	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164630	10/03/12 15:45	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-E2 FLOOR (2-2.5 FT BGS)

Lab Sample ID: 500-50850-2

Date Collected: 10/03/12 10:00

Matrix: Solid

Date Received: 10/03/12 15:30

Percent Solids: 85.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164692	10/04/12 09:09	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164828	10/04/12 21:53	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164630	10/03/12 15:45	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-D2 (0-2 FT BGS)

Lab Sample ID: 500-50850-3

Date Collected: 10/03/12 10:15

Matrix: Solid

Date Received: 10/03/12 15:30

Percent Solids: 86.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164692	10/04/12 09:09	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164828	10/04/12 22:00	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164630	10/03/12 15:45	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-D9 (0-2 FT BGS)

Lab Sample ID: 500-50850-4

Date Collected: 10/03/12 10:30

Matrix: Solid

Date Received: 10/03/12 15:30

Percent Solids: 93.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164692	10/04/12 09:09	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164828	10/04/12 22:25	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164630	10/03/12 15:45	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-C2 SIDEWALLS (0-2 FT BGS)

Lab Sample ID: 500-50850-5

Date Collected: 10/03/12 13:45

Matrix: Solid

Date Received: 10/03/12 15:30

Percent Solids: 98.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164692	10/04/12 09:09	LAH	TAL CHI
Total/NA	Analysis	6010B		1	164828	10/04/12 22:31	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164630	10/03/12 15:45	CMV	TAL CHI

TestAmerica Chicago

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50850-1

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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# Certification Summary

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-50850-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAP	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAP	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAP	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAP	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAP	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAP	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13

Chicago  
2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

### Chain of Custody Record



TestAmerica Laborator

<b>Client Contact</b>		<b>Project Manager: Randy Palachek</b>		<b>Site Contact: Keith Thompson</b>		<b>Date: 25 September 2012</b>		<b>COC No:</b>	
Wanda Davis - URS Corp. ADQM		Tel/Fax: 512.719.6006		Lab Contact: Richard Wright		Carrier: TA Courier		1 of 1 CO	
Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300		<b>Analysis Turnaround Time</b>							
Newark, DE 19713		Calendar (C) or Work Days (W) _____							
(302) 781-5892		TAT if different from Below 3-Day TAT _____							
(302) 781-5901 Fax		<input type="checkbox"/> 2 weeks							
Project Name: IRM Sampling		<input type="checkbox"/> 1 week							
Site Location: DuPont East Chicago, Indiana		<input type="checkbox"/> 2 days							
PO#: LBIO-65636, Client Project#: 9267-7720100C-WHO650794		<input type="checkbox"/> 1 day							

Job No.  
**500-50850**

SDG No. \_\_\_\_\_

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	As, Pb, Cu											Sample Specific N		
1 ECH-S-IRM1-HW-E2 Sidewalls (0-2 ft bgs)	10/3/2012	9:45 AM	Composite	SOIL	1	N	X													48 Hours TAT
2 ECH-S-IRM1-HW-E2 Floor (2 ft bgs)	10/3/2012	10:00 AM	Composite	SOIL	1	N	X													48 Hours TAT
3 ECH-S-IRM1-HW-D2 (0-2 ft bgs)	10/3/2012	10:15 AM	Composite	SOIL	1	N	X													48 Hours TAT
4 ECH-S-IRM1-HW-D9 (0-2 ft bgs)	10/3/2012	10:30 AM	Composite	SOIL	1	N	X													48 Hours TAT
5 ECH-S-IRM1-HW-C2 Sidewalls (0-2 ft bgs)	10/3/2012	1:45 PM	Composite	SOIL	1	N	X													48 Hours TAT
						N														
						N														
						N														
						N														
						N														
						N														
						N														
						N														

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other \_\_\_\_\_

Possible Hazard Identification: Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month):  Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Month

Special Instructions/QC Requirements & Comments:

Relinquished by: Florin Savin	Company: PARSONS	Date/Time: 10/3/12 2:45 PM	Received by:	Company: TestAmerica	Date/Time: 10/3/12 1425
Relinquished by:	Company:	Date/Time:	Received by:	Company: TA	Date/Time: 10/3/12 1530
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:



Chicago  
2417 Bond Street

University Park, IL 60466  
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### Chain of Custody Record

**TestAme**  
THE LEADER IN ENVIRONMENTAL

3 October

TestAmerica Laborator

<b>Client Contact</b> Wanda Davis - URS Corp. ADQM Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300 Newark, DE 19713 (302) 781-5892 (302) 781-5901 Fax Project Name: IRM Sampling Site Location: DuPont East Chicago, Indiana PO#: LBIO-65636, Client Project#: 9267-7720100C-WHO650794	<b>Project Manager: Randy Palachek</b> Tel/Fax: 512.719.6006	<b>Site Contact: Keith Thompson</b> Lab Contact: Richard Wright	<b>Date: 26 September 2012</b> Carrier: TA Courier	<b>COC No:</b> 1 of 1 CO  Job No: 500-50850 SDG No: Revision
<b>Analysis Turnaround Time</b> Calendar (C) or Work Days (W) TAT if different from Below: 3-Day TAT <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day				

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	As. Pb, Cu	Sample Specific N
ECH-S-IRM1-HW-E2 Sidewalls (0-2 ft bgs)	10/3/2012	9:45 AM	Composite	SOIL	1	N	X	48 Hours TAT
ECH-S-IRM1-HW-E2 Floor (2 ft bgs) (2 - 2.5 ft bgs)	10/3/2012	10:00 AM	Composite	SOIL	1	N	X	48 Hours TAT
ECH-S-IRM1-HW-D2 (0-2 ft bgs)	10/3/2012	10:15 AM	Composite	SOIL	1	N	X	48 Hours TAT
ECH-S-IRM1-HW-D9 (0-2 ft bgs)	10/3/2012	10:30 AM	Composite	SOIL	1	N	X	48 Hours TAT
ECH-S-IRM1-HW-C2 Sidewalls (0-2 ft bgs)	10/3/2012	1:45 PM	Composite	SOIL	1	N	X	48 Hours TAT
						N		
						N		
						N		
						N		
						N		
						N		
						N		
						N		

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Month

Special Instructions/QC Requirements & Comments:

Relinquished by: Florin Savin	Company: PARSONS	Date/Time: 10/3/12 2:40 PM	Received by: <i>[Signature]</i>	Company: TestAme	Date/Time: 10/3/12 1405
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:



## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-50850-1

**Login Number: 50850**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Lunt, Jeff T**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	3.8
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-50904-1  
Client Project/Site: IRM Sampling  
Revision: 1

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
12/20/2012 2:17:45 PM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50904-1

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**Job ID: 500-50904-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-50904-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 10/4/2012 3:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.2° C.

**Revised Report**

Sample ID changes made by Parsons - see amended COCs.

**Metals**

Method(s) 6010B: The matrix duplicate %RPD for sample 500-50904-7 was outside the control limits for Cd and Pb.

Method(s) 6010B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for sample 500-50904-7 were outside control limits for As. The MS was also out for Cd. The associated laboratory control sample (LCS) recovery met acceptance criteria.

No other analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50904-1

## Client Sample ID: ECH-S-IRM1-HW-C1 NORTH WALL (0-2 FT BGS)

Lab Sample ID: 500-50904-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	75		5.1	1.1	mg/Kg	5	*	6010B	Total/NA
Cadmium	14		1.0	0.25	mg/Kg	5	*	6010B	Total/NA
Lead	32000		51	18	mg/Kg	100	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-C1 S,E,W WALLS (0-2 FT BGS)

Lab Sample ID: 500-50904-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	190		5.7	1.3	mg/Kg	5	*	6010B	Total/NA
Cadmium	6.9		1.1	0.28	mg/Kg	5	*	6010B	Total/NA
Lead	1400		2.9	0.99	mg/Kg	5	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-C1 FLOOR (2-2.5 FT BGS)

Lab Sample ID: 500-50904-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	220		4.8	1.1	mg/Kg	5	*	6010B	Total/NA
Cadmium	18		0.96	0.24	mg/Kg	5	*	6010B	Total/NA
Lead	14000		2.4	0.83	mg/Kg	5	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D1 S,E,WALLS (0-2 FT BGS)

Lab Sample ID: 500-50904-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	11		5.1	1.1	mg/Kg	5	*	6010B	Total/NA
Cadmium	1.6		1.0	0.25	mg/Kg	5	*	6010B	Total/NA
Lead	1300		2.6	0.88	mg/Kg	5	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D3 S,E,W WALLS (0-2 FT BGS)

Lab Sample ID: 500-50904-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	150		4.8	1.0	mg/Kg	5	*	6010B	Total/NA
Cadmium	19		0.96	0.24	mg/Kg	5	*	6010B	Total/NA
Lead	940		2.4	0.83	mg/Kg	5	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D5 (0-2 FT BGS)

Lab Sample ID: 500-50904-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	25		5.1	1.1	mg/Kg	5	*	6010B	Total/NA
Cadmium	61		1.0	0.25	mg/Kg	5	*	6010B	Total/NA
Lead	860		2.6	0.88	mg/Kg	5	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D7 (0-2 FT BGS)

Lab Sample ID: 500-50904-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	33		4.9	1.1	mg/Kg	5	*	6010B	Total/NA
Cadmium	21		0.98	0.24	mg/Kg	5	*	6010B	Total/NA
Lead	2700		2.5	0.84	mg/Kg	5	*	6010B	Total/NA

TestAmerica Chicago

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50904-1

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Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

---

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

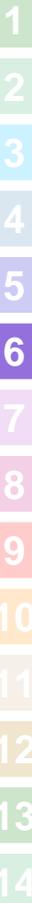
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# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50904-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-50904-1	ECH-S-IRM1-HW-C1 NORTH WALL (0-2 FT BGS)	Solid	10/04/12 08:50	10/04/12 15:40
500-50904-2	ECH-S-IRM1-HW-C1 S,E,W WALLS (0-2 FT BGS)	Solid	10/04/12 10:10	10/04/12 15:40
500-50904-3	ECH-S-IRM1-HW-C1 FLOOR (2-2.5 FT BGS)	Solid	10/04/12 10:20	10/04/12 15:40
500-50904-4	ECH-S-IRM1-HW-D1 S,E,WALLS (0-2 FT BGS)	Solid	10/04/12 10:30	10/04/12 15:40
500-50904-5	ECH-S-IRM1-HW-D3 S,E,W WALLS (0-2 FT BGS)	Solid	10/04/12 11:00	10/04/12 15:40
500-50904-6	ECH-S-IRM1-HW-D5 (0-2 FT BGS)	Solid	10/04/12 12:05	10/04/12 15:40
500-50904-7	ECH-S-IRM1-HW-D7 (0-2 FT BGS)	Solid	10/04/12 14:20	10/04/12 15:40



# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50904-1

**Client Sample ID: ECH-S-IRM1-HW-C1 NORTH WALL (0-2 FT BGS)**

**Lab Sample ID: 500-50904-1**

**Date Collected: 10/04/12 08:50**

**Matrix: Solid**

**Date Received: 10/04/12 15:40**

**Percent Solids: 88.1**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	75		5.1	1.1	mg/Kg	☼	10/05/12 09:26	10/05/12 17:43	5
Cadmium	14		1.0	0.25	mg/Kg	☼	10/05/12 09:26	10/05/12 17:43	5
Lead	32000		51	18	mg/Kg	☼	10/05/12 09:26	10/06/12 14:09	100

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50904-1

**Client Sample ID: ECH-S-IRM1-HW-C1 S,E,W WALLS (0-2 FT BGS)**

**Lab Sample ID: 500-50904-2**

**Date Collected: 10/04/12 10:10**

**Matrix: Solid**

**Date Received: 10/04/12 15:40**

**Percent Solids: 86.8**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	190		5.7	1.3	mg/Kg	☼	10/05/12 09:26	10/05/12 17:49	5
Cadmium	6.9		1.1	0.28	mg/Kg	☼	10/05/12 09:26	10/05/12 17:49	5
Lead	1400		2.9	0.99	mg/Kg	☼	10/05/12 09:26	10/05/12 17:49	5

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50904-1

**Client Sample ID: ECH-S-IRM1-HW-C1 FLOOR (2-2.5 FT BGS)**

**Lab Sample ID: 500-50904-3**

Date Collected: 10/04/12 10:20

Matrix: Solid

Date Received: 10/04/12 15:40

Percent Solids: 91.4

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	220		4.8	1.1	mg/Kg	✱	10/05/12 09:26	10/05/12 17:55	5
Cadmium	18		0.96	0.24	mg/Kg	✱	10/05/12 09:26	10/05/12 17:55	5
Lead	14000		2.4	0.83	mg/Kg	✱	10/05/12 09:26	10/05/12 17:55	5

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50904-1

**Client Sample ID: ECH-S-IRM1-HW-D1 S,E,WALLS (0-2 FT BGS)**

**Lab Sample ID: 500-50904-4**

**Date Collected: 10/04/12 10:30**

**Matrix: Solid**

**Date Received: 10/04/12 15:40**

**Percent Solids: 88.1**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	11		5.1	1.1	mg/Kg	⊛	10/05/12 09:26	10/05/12 18:02	5
Cadmium	1.6		1.0	0.25	mg/Kg	⊛	10/05/12 09:26	10/05/12 18:02	5
Lead	1300		2.6	0.88	mg/Kg	⊛	10/05/12 09:26	10/05/12 18:02	5

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50904-1

**Client Sample ID: ECH-S-IRM1-HW-D3 S,E,W WALLS (0-2 FT BGS)**

**Lab Sample ID: 500-50904-5**

**Date Collected: 10/04/12 11:00**

**Matrix: Solid**

**Date Received: 10/04/12 15:40**

**Percent Solids: 92.4**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	150		4.8	1.0	mg/Kg	☼	10/05/12 09:26	10/05/12 18:08	5
Cadmium	19		0.96	0.24	mg/Kg	☼	10/05/12 09:26	10/05/12 18:08	5
Lead	940		2.4	0.83	mg/Kg	☼	10/05/12 09:26	10/05/12 18:08	5

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50904-1

**Client Sample ID: ECH-S-IRM1-HW-D5 (0-2 FT BGS)**

**Lab Sample ID: 500-50904-6**

Date Collected: 10/04/12 12:05

Matrix: Solid

Date Received: 10/04/12 15:40

Percent Solids: 86.5

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	25		5.1	1.1	mg/Kg	✱	10/05/12 09:26	10/05/12 18:14	5
Cadmium	61		1.0	0.25	mg/Kg	✱	10/05/12 09:26	10/05/12 18:14	5
Lead	860		2.6	0.88	mg/Kg	✱	10/05/12 09:26	10/05/12 18:14	5

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50904-1

**Client Sample ID: ECH-S-IRM1-HW-D7 (0-2 FT BGS)**

**Lab Sample ID: 500-50904-7**

Date Collected: 10/04/12 14:20

Matrix: Solid

Date Received: 10/04/12 15:40

Percent Solids: 87.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	33		4.9	1.1	mg/Kg	✱	10/05/12 09:26	10/05/12 18:20	5
Cadmium	21		0.98	0.24	mg/Kg	✱	10/05/12 09:26	10/05/12 18:20	5
Lead	2700		2.5	0.84	mg/Kg	✱	10/05/12 09:26	10/05/12 18:20	5

# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50904-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
F	Duplicate RPD exceeds the control limit
F	MS or MSD exceeds the control limits
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50904-1

## Metals

### Prep Batch: 164840

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50904-1	ECH-S-IRM1-HW-C1 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50904-2	ECH-S-IRM1-HW-C1 S,E,W WALLS (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50904-3	ECH-S-IRM1-HW-C1 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	3050B	
500-50904-4	ECH-S-IRM1-HW-D1 S,E,WALLS (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50904-5	ECH-S-IRM1-HW-D3 S,E,W WALLS (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50904-6	ECH-S-IRM1-HW-D5 (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50904-7	ECH-S-IRM1-HW-D7 (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50904-7 DU	ECH-S-IRM1-HW-D7 (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50904-7 MS	ECH-S-IRM1-HW-D7 (0-2 FT BGS)	Total/NA	Solid	3050B	
500-50904-7 MSD	ECH-S-IRM1-HW-D7 (0-2 FT BGS)	Total/NA	Solid	3050B	
LCS 500-164840/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-164840/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 164961

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50904-1	ECH-S-IRM1-HW-C1 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	6010B	164840
500-50904-2	ECH-S-IRM1-HW-C1 S,E,W WALLS (0-2 FT BGS)	Total/NA	Solid	6010B	164840
500-50904-3	ECH-S-IRM1-HW-C1 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	6010B	164840
500-50904-4	ECH-S-IRM1-HW-D1 S,E,WALLS (0-2 FT BGS)	Total/NA	Solid	6010B	164840
500-50904-5	ECH-S-IRM1-HW-D3 S,E,W WALLS (0-2 FT BGS)	Total/NA	Solid	6010B	164840
500-50904-6	ECH-S-IRM1-HW-D5 (0-2 FT BGS)	Total/NA	Solid	6010B	164840
500-50904-7	ECH-S-IRM1-HW-D7 (0-2 FT BGS)	Total/NA	Solid	6010B	164840
500-50904-7 DU	ECH-S-IRM1-HW-D7 (0-2 FT BGS)	Total/NA	Solid	6010B	164840
500-50904-7 MS	ECH-S-IRM1-HW-D7 (0-2 FT BGS)	Total/NA	Solid	6010B	164840
500-50904-7 MSD	ECH-S-IRM1-HW-D7 (0-2 FT BGS)	Total/NA	Solid	6010B	164840
LCS 500-164840/2-A	Lab Control Sample	Total/NA	Solid	6010B	164840
MB 500-164840/1-A	Method Blank	Total/NA	Solid	6010B	164840

### Analysis Batch: 165007

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50904-1	ECH-S-IRM1-HW-C1 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	6010B	164840

## General Chemistry

### Analysis Batch: 164835

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-50904-1	ECH-S-IRM1-HW-C1 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50904-1 DU	ECH-S-IRM1-HW-C1 NORTH WALL (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50904-2	ECH-S-IRM1-HW-C1 S,E,W WALLS (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50904-3	ECH-S-IRM1-HW-C1 FLOOR (2-2.5 FT BGS)	Total/NA	Solid	Moisture	
500-50904-4	ECH-S-IRM1-HW-D1 S,E,WALLS (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50904-5	ECH-S-IRM1-HW-D3 S,E,W WALLS (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50904-6	ECH-S-IRM1-HW-D5 (0-2 FT BGS)	Total/NA	Solid	Moisture	
500-50904-7	ECH-S-IRM1-HW-D7 (0-2 FT BGS)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50904-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-164840/1-A**  
**Matrix: Solid**  
**Analysis Batch: 164961**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 164840**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		10/05/12 09:26	10/05/12 17:31	1
Cadmium	ND		0.20	0.050	mg/Kg		10/05/12 09:26	10/05/12 17:31	1
Lead	ND		0.50	0.17	mg/Kg		10/05/12 09:26	10/05/12 17:31	1

**Lab Sample ID: LCS 500-164840/2-A**  
**Matrix: Solid**  
**Analysis Batch: 164961**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 164840**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.06		mg/Kg		91	80 - 120
Cadmium	5.00	4.84		mg/Kg		97	80 - 120
Lead	10.0	10.3		mg/Kg		103	80 - 120

**Lab Sample ID: 500-50904-7 MS**  
**Matrix: Solid**  
**Analysis Batch: 164961**

**Client Sample ID: ECH-S-IRM1-HW-D7 (0-2 FT BGS)**  
**Prep Type: Total/NA**  
**Prep Batch: 164840**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	33		11.3	35.6	F	mg/Kg	✱	27	75 - 125
Cadmium	21		5.67	19.3	F	mg/Kg	✱	-34	75 - 125
Lead	2700		11.3	1970	4	mg/Kg	✱	-6205	75 - 125

**Lab Sample ID: 500-50904-7 MSD**  
**Matrix: Solid**  
**Analysis Batch: 164961**

**Client Sample ID: ECH-S-IRM1-HW-D7 (0-2 FT BGS)**  
**Prep Type: Total/NA**  
**Prep Batch: 164840**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	33		10.5	37.4	F	mg/Kg	✱	46	75 - 125	5	20
Cadmium	21		5.26	17.4	4	mg/Kg	✱	-73	75 - 125	10	20
Lead	2700		10.5	2150	4	mg/Kg	✱	-4991	75 - 125	9	20

**Lab Sample ID: 500-50904-7 DU**  
**Matrix: Solid**  
**Analysis Batch: 164961**

**Client Sample ID: ECH-S-IRM1-HW-D7 (0-2 FT BGS)**  
**Prep Type: Total/NA**  
**Prep Batch: 164840**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	33		30.9		mg/Kg	✱	5	20
Cadmium	21		9.52	F	mg/Kg	✱	76	20
Lead	2700		2170	F	mg/Kg	✱	21	20

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50904-1

## Client Sample ID: ECH-S-IRM1-HW-C1 NORTH WALL (0-2 FT BGS)

Lab Sample ID: 500-50904-1

Date Collected: 10/04/12 08:50  
Date Received: 10/04/12 15:40

Matrix: Solid  
Percent Solids: 88.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164840	10/05/12 09:26	LAH	TAL CHI
Total/NA	Analysis	6010B		5	164961	10/05/12 17:43	TDS	TAL CHI
Total/NA	Analysis	6010B		100	165007	10/06/12 14:09	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164835	10/05/12 08:15	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-C1 S,E,W WALLS (0-2 FT BGS)

Lab Sample ID: 500-50904-2

Date Collected: 10/04/12 10:10  
Date Received: 10/04/12 15:40

Matrix: Solid  
Percent Solids: 86.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164840	10/05/12 09:26	LAH	TAL CHI
Total/NA	Analysis	6010B		5	164961	10/05/12 17:49	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164835	10/05/12 08:15	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-C1 FLOOR (2-2.5 FT BGS)

Lab Sample ID: 500-50904-3

Date Collected: 10/04/12 10:20  
Date Received: 10/04/12 15:40

Matrix: Solid  
Percent Solids: 91.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164840	10/05/12 09:26	LAH	TAL CHI
Total/NA	Analysis	6010B		5	164961	10/05/12 17:55	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164835	10/05/12 08:15	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-D1 S,E,WALLS (0-2 FT BGS)

Lab Sample ID: 500-50904-4

Date Collected: 10/04/12 10:30  
Date Received: 10/04/12 15:40

Matrix: Solid  
Percent Solids: 88.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164840	10/05/12 09:26	LAH	TAL CHI
Total/NA	Analysis	6010B		5	164961	10/05/12 18:02	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164835	10/05/12 08:15	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-D3 S,E,W WALLS (0-2 FT BGS)

Lab Sample ID: 500-50904-5

Date Collected: 10/04/12 11:00  
Date Received: 10/04/12 15:40

Matrix: Solid  
Percent Solids: 92.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164840	10/05/12 09:26	LAH	TAL CHI

TestAmerica Chicago

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-50904-1

**Client Sample ID: ECH-S-IRM1-HW-D3 S,E,W WALLS (0-2 FT BGS)**

**Lab Sample ID: 500-50904-5**

Date Collected: 10/04/12 11:00

Matrix: Solid

Date Received: 10/04/12 15:40

Percent Solids: 92.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	6010B		5	164961	10/05/12 18:08	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164835	10/05/12 08:15	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-HW-D5 (0-2 FT BGS)**

**Lab Sample ID: 500-50904-6**

Date Collected: 10/04/12 12:05

Matrix: Solid

Date Received: 10/04/12 15:40

Percent Solids: 86.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164840	10/05/12 09:26	LAH	TAL CHI
Total/NA	Analysis	6010B		5	164961	10/05/12 18:14	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164835	10/05/12 08:15	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-HW-D7 (0-2 FT BGS)**

**Lab Sample ID: 500-50904-7**

Date Collected: 10/04/12 14:20

Matrix: Solid

Date Received: 10/04/12 15:40

Percent Solids: 87.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			164840	10/05/12 09:26	LAH	TAL CHI
Total/NA	Analysis	6010B		5	164961	10/05/12 18:20	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	164835	10/05/12 08:15	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-50904-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAP	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAP	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAP	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAP	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAP	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAP	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13

Chicago  
2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

### Chain of Custody Record

**TestAme**  
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laborator

<b>Client Contact</b>	<b>Project Manager: Randy Palachek</b>	<b>Site Contact: Keith Thompson</b>	<b>Date: 25 September 2012</b>	<b>COC No:</b>
Wanda Davis - URS Corp. ADQM	Tel/Fax: 512.719.6006	Lab Contact: Richard Wright	Carrier: TA Courier	1 of 1 CO
Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300	<b>Analysis Turnaround Time</b>			Job No. <b>500-50904</b>
Newark, DE 19713	Calendar (C) or Work Days (W) _____			SDG No.
(302) 781-5892	TAT if different from Below 3-Day TAT _____			
(302) 781-5901 Fax	<input type="checkbox"/> 2 weeks			
Project Name: IRM Sampling	<input type="checkbox"/> 1 week			
Site Location: DuPont East Chicago, Indiana	<input checked="" type="checkbox"/> 2 days			
PO#: LBIO-65636, Client Project#: 9267-7720100C-WHO650794	<input type="checkbox"/> 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	As, Pb, Cd	Sample Specific N
1 ECH-S-IRM1-HW-C1 North Wall (0-2 ft bgs)	10/4/2012	8:50 AM	Composite	SOIL	1	N	X	48 Hours TAI
2 ECH-S-IRM1-HW-C1 S,E,W Walls (0-2 ft bgs)	10/4/2012	10:10 AM	Composite	SOIL	1	N	X	48 Hours TAI
3 ECH-S-IRM1-HW-C1 Floor (2 ft bgs)	10/4/2012	10:20 AM	Composite	SOIL	1	N	X	48 Hours TAI
4 ECH-S-IRM1-HW-D1 S,E Walls (0-2 ft bgs)	10/4/2012	10:30 AM	Composite	SOIL	1	N	X	48 Hours TAI
5 ECH-S-IRM1-HW-D3 S,E,W Walls (0-2 ft bgs)	10/4/2012	11:00 AM	Composite	SOIL	1	N	X	48 Hours TAI
6 ECH-S-IRM1-HW-D5 (0-2 ft bgs)	10/4/2012	12:05 PM	Composite	SOIL	1	N	X	48 Hours TAI
7 ECH-S-IRM1-HW-D7 (0-2 ft bgs)	10/4/2012	2:20 PM	Composite	SOIL	1	N	X	48 Hours TAI
						N		
						N		
						N		
						N		
						N		

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other \_\_\_\_\_

Possible Hazard Identification  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Month.

Special Instructions/QC Requirements & Comments:

Relinquished by: Florin Savin	Company: PARSONS	Date/Time: 10/4/12 15:40	Received by: <i>[Signature]</i>	Company: TestAmerica	Date/Time: 10/4/12 1540
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Chicago  
2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

Chain of Custody Record

TestAmerica  
THE LEADER IN ENVIRONMENTAL

4 October

TestAmerica Laborator

Client Contact Wanda Davis - URS Corp, ADQM Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300 Newark, DE 19713 (302) 781-5892 (302) 781-5901 Fax Project Name: IRM Sampling Site Location: DuPont East Chicago, Indiana PO#: LBIO-85636, Client Project#: 9287-7720100C-WHO650794	Project Manager: Randy Palachek Tel/Fax: 512.719.6006	Site Contact: Keith Thompson Lab Contact: Richard Wright	Date: 24 September 2012 Carrier: TA Courler	COC No: 1 of 1 CO Job No: 500-50904 SDG No: Revision
---	--	---	--	---

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	As, Pb, Cd	Sample Specific N
ECH-S-IRM1-HW-C1 North Wall (0-2 ft bgs)	10/4/2012	8:50 AM	Composite	SOIL	1	X		48 Hours TAT
ECH-S-IRM1-HW-C1 S,E,W Walls (0-2 ft bgs)	10/4/2012	10:10 AM	Composite	SOIL	1	N	X	48 Hours TAT
ECH-S-IRM1-HW-C1 Floor (2-ft bgs) (2-2.5 ft bgs)	10/4/2012	10:20 AM	Composite	SOIL	1	N	X	48 Hours TAT
ECH-S-IRM1-HW-D1 S,E Walls (0-2 ft bgs)	10/4/2012	10:30 AM	Composite	SOIL	1	N	X	48 Hours TAT
ECH-S-IRM1-HW-D3 S,E,W Walls (0-2 ft bgs)	10/4/2012	11:00 AM	Composite	SOIL	1	N	X	48 Hours TAT
ECH-S-IRM1-HW-D5 (0-2 ft bgs)	10/4/2012	12:05 PM	Composite	SOIL	1	N	X	48 Hours TAT
ECH-S-IRM1-HW-D7 (0-2 ft bgs)	10/4/2012	2:20 PM	Composite	SOIL	1	N	X	48 Hours TAT
						N		
						N		
						N		
						N		
						N		

Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4=HNO3, 5=NaOH, 6= Other

Possible Hazard Identification  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Month

Special Instructions/QC Requirements & Comments:

Relinquished by: Florin Savin	Company: PARSONS	Date/Time: 10/4/12 15:40	Received by: [Signature]	Company: TestAmerica	Date/Time: 10/4/12 15:40
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-50904-1

**Login Number: 50904**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Lunt, Jeff T**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	4.2
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

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## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-51175-1  
Client Project/Site: IRM Sampling

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
10/16/2012 10:38:40 AM  
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Designee for  
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*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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[www.testamericainc.com](http://www.testamericainc.com)

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51175-1

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**Job ID: 500-51175-1**

---

**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-51175-1**

**Comments**

No additional comments.

**Receipt**

The sample was received on 10/11/2012 3:30 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.6° C.

**Metals**

No analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51175-1

Client Sample ID: ECH-S-IRM1-HW-E1(0-2ft bgs)

Lab Sample ID: 500-51175-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	16		0.98	0.21	mg/Kg	1	☼	6010B	Total/NA
Cadmium	33		0.20	0.049	mg/Kg	1	☼	6010B	Total/NA
Lead	17000	B	49	17	mg/Kg	100	☼	6010B	Total/NA

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# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51175-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

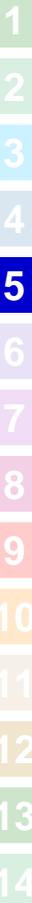
**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51175-1

---

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-51175-1	ECH-S-IRM1-HW-E1(0-2ft bgs)	Solid	10/11/12 08:30	10/11/12 15:30

---

- 1
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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51175-1

**Client Sample ID: ECH-S-IRM1-HW-E1(0-2ft bgs)**

**Lab Sample ID: 500-51175-1**

**Date Collected: 10/11/12 08:30**

**Matrix: Solid**

**Date Received: 10/11/12 15:30**

**Percent Solids: 95.0**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	16		0.98	0.21	mg/Kg	✱	10/15/12 09:38	10/15/12 19:36	1
Cadmium	33		0.20	0.049	mg/Kg	✱	10/15/12 09:38	10/15/12 19:36	1
Lead	17000	B	49	17	mg/Kg	✱	10/15/12 09:38	10/15/12 19:42	100

# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51175-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51175-1

## Metals

### Prep Batch: 165854

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51175-1	ECH-S-IRM1-HW-E1(0-2ft bgs)	Total/NA	Solid	3050B	
LCS 500-165854/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-165854/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 165976

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51175-1	ECH-S-IRM1-HW-E1(0-2ft bgs)	Total/NA	Solid	6010B	165854
500-51175-1	ECH-S-IRM1-HW-E1(0-2ft bgs)	Total/NA	Solid	6010B	165854
LCS 500-165854/2-A	Lab Control Sample	Total/NA	Solid	6010B	165854
MB 500-165854/1-A	Method Blank	Total/NA	Solid	6010B	165854

## General Chemistry

### Analysis Batch: 165691

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51175-1	ECH-S-IRM1-HW-E1(0-2ft bgs)	Total/NA	Solid	Moisture	
500-51175-1 DU	ECH-S-IRM1-HW-E1(0-2ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51175-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-165854/1-A**  
**Matrix: Solid**  
**Analysis Batch: 165976**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 165854**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		10/15/12 09:38	10/15/12 18:04	1
Cadmium	ND		0.20	0.050	mg/Kg		10/15/12 09:38	10/15/12 18:04	1
Lead	0.298	J	0.50	0.17	mg/Kg		10/15/12 09:38	10/15/12 18:04	1

**Lab Sample ID: LCS 500-165854/2-A**  
**Matrix: Solid**  
**Analysis Batch: 165976**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 165854**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	8.76		mg/Kg		88	80 - 120
Cadmium	5.00	4.61		mg/Kg		92	80 - 120
Lead	10.0	9.76		mg/Kg		98	80 - 120

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51175-1

**Client Sample ID: ECH-S-IRM1-HW-E1(0-2ft bgs)**

**Lab Sample ID: 500-51175-1**

**Date Collected: 10/11/12 08:30**

**Matrix: Solid**

**Date Received: 10/11/12 15:30**

**Percent Solids: 95.0**

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Prep	3050B			165854	10/15/12 09:38	LAH	TAL CHI
Total/NA	Analysis	6010B		1	165976	10/15/12 19:36	TDS	TAL CHI
Total/NA	Analysis	6010B		100	165976	10/15/12 19:42	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165691	10/12/12 13:13	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Certification Summary

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51175-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-12
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13





## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-51175-1

**Login Number: 51175**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Lunt, Jeff T**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	4.6
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-51176-1  
Client Project/Site: East Chicago

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
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Designee for  
Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

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*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Case Narrative

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

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**Job ID: 500-51176-1**

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**Laboratory: TestAmerica Chicago**

## Narrative

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**Job Narrative**  
**500-51176-1**

## Comments

No additional comments.

## Receipt

The samples were received on 10/11/2012 3:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.6° C.

## Metals

Method(s) 6010B: The serial dilution performed for the following sample, 500-51176-1, was outside control limits for As and Zn.

Method(s) 6010B: The matrix duplicate %RPD for sample 500-51176-1 was outside the control limits for As and Zn.

No other analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

## Client Sample ID: ECH-S-IRM1-G1 (0-2ft bgs)

Lab Sample ID: 500-51176-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	16	V	1.1	0.23	mg/Kg	1	☼	6010B	Total/NA
Cadmium	11		0.21	0.053	mg/Kg	1	☼	6010B	Total/NA
Lead	420	B	0.53	0.18	mg/Kg	1	☼	6010B	Total/NA
Zinc	1300	V	2.1	0.73	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-G2 (0-2ft bgs)

Lab Sample ID: 500-51176-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	18		1.0	0.22	mg/Kg	1	☼	6010B	Total/NA
Cadmium	7.9		0.20	0.050	mg/Kg	1	☼	6010B	Total/NA
Lead	280	B	0.51	0.18	mg/Kg	1	☼	6010B	Total/NA
Zinc	1700		2.0	0.70	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-G3 (0-2ft bgs)

Lab Sample ID: 500-51176-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	6.9		1.1	0.24	mg/Kg	1	☼	6010B	Total/NA
Cadmium	3.7		0.22	0.055	mg/Kg	1	☼	6010B	Total/NA
Lead	130	B	0.55	0.19	mg/Kg	1	☼	6010B	Total/NA
Zinc	890		2.2	0.76	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-G4 (0-2ft bgs)

Lab Sample ID: 500-51176-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	19		1.4	0.31	mg/Kg	1	☼	6010B	Total/NA
Cadmium	7.4		0.29	0.071	mg/Kg	1	☼	6010B	Total/NA
Lead	480	B	0.72	0.25	mg/Kg	1	☼	6010B	Total/NA
Zinc	1300		2.9	0.98	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-G5 (0-2ft bgs)

Lab Sample ID: 500-51176-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	30		1.4	0.30	mg/Kg	1	☼	6010B	Total/NA
Cadmium	15		0.28	0.068	mg/Kg	1	☼	6010B	Total/NA
Lead	330	B	0.69	0.24	mg/Kg	1	☼	6010B	Total/NA
Zinc	2500		2.8	0.94	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-G6 (0-2ft bgs)

Lab Sample ID: 500-51176-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	11		1.7	0.37	mg/Kg	1	☼	6010B	Total/NA
Cadmium	7.8		0.34	0.085	mg/Kg	1	☼	6010B	Total/NA
Lead	190	B	0.85	0.29	mg/Kg	1	☼	6010B	Total/NA
Zinc	1600		3.4	1.2	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-G5 duplicate (0-2ft bgs)

Lab Sample ID: 500-51176-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	7.0		1.3	0.28	mg/Kg	1	☼	6010B	Total/NA
Cadmium	4.8		0.26	0.064	mg/Kg	1	☼	6010B	Total/NA
Lead	95	B	0.65	0.22	mg/Kg	1	☼	6010B	Total/NA
Zinc	1500		2.6	0.89	mg/Kg	1	☼	6010B	Total/NA

# Detection Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

## Client Sample ID: ECH-S-IRM1-G7 (0-2ft bgs)

Lab Sample ID: 500-51176-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	43		2.0	0.44	mg/Kg	1	☼	6010B	Total/NA
Cadmium	39		0.40	0.099	mg/Kg	1	☼	6010B	Total/NA
Lead	2100	B	1.0	0.34	mg/Kg	1	☼	6010B	Total/NA
Zinc	6300		40	14	mg/Kg	10	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-G8 (0-2ft bgs)

Lab Sample ID: 500-51176-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	61		2.0	0.43	mg/Kg	1	☼	6010B	Total/NA
Cadmium	27		0.39	0.097	mg/Kg	1	☼	6010B	Total/NA
Lead	810	B	0.98	0.34	mg/Kg	1	☼	6010B	Total/NA
Zinc	4700		39	13	mg/Kg	10	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-G9 (0-2ft bgs)

Lab Sample ID: 500-51176-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	5.9		1.3	0.28	mg/Kg	1	☼	6010B	Total/NA
Cadmium	2.6		0.26	0.064	mg/Kg	1	☼	6010B	Total/NA
Lead	60	B	0.65	0.22	mg/Kg	1	☼	6010B	Total/NA
Zinc	490		2.6	0.89	mg/Kg	1	☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

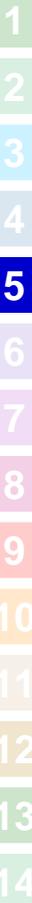
**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

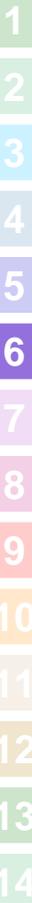


# Sample Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-51176-1	ECH-S-IRM1-G1 (0-2ft bgs)	Solid	10/11/12 10:30	10/11/12 15:30
500-51176-2	ECH-S-IRM1-G2 (0-2ft bgs)	Solid	10/11/12 10:45	10/11/12 15:30
500-51176-3	ECH-S-IRM1-G3 (0-2ft bgs)	Solid	10/11/12 11:00	10/11/12 15:30
500-51176-4	ECH-S-IRM1-G4 (0-2ft bgs)	Solid	10/11/12 11:15	10/11/12 15:30
500-51176-5	ECH-S-IRM1-G5 (0-2ft bgs)	Solid	10/11/12 11:30	10/11/12 15:30
500-51176-6	ECH-S-IRM1-G6 (0-2ft bgs)	Solid	10/11/12 11:45	10/11/12 15:30
500-51176-7	ECH-S-IRM1-G5 duplicate (0-2ft bgs)	Solid	10/11/12 11:30	10/11/12 15:30
500-51176-8	ECH-S-IRM1-G7 (0-2ft bgs)	Solid	10/11/12 12:00	10/11/12 15:30
500-51176-9	ECH-S-IRM1-G8 (0-2ft bgs)	Solid	10/11/12 12:15	10/11/12 15:30
500-51176-10	ECH-S-IRM1-G9 (0-2ft bgs)	Solid	10/11/12 12:30	10/11/12 15:30



# Client Sample Results

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

**Client Sample ID: ECH-S-IRM1-G1 (0-2ft bgs)**

**Lab Sample ID: 500-51176-1**

**Date Collected: 10/11/12 10:30**

**Matrix: Solid**

**Date Received: 10/11/12 15:30**

**Percent Solids: 81.9**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	16	V	1.1	0.23	mg/Kg	✱	10/17/12 09:30	10/17/12 22:29	1
Cadmium	11		0.21	0.053	mg/Kg	✱	10/17/12 09:30	10/17/12 22:29	1
Lead	420	B	0.53	0.18	mg/Kg	✱	10/17/12 09:30	10/17/12 22:29	1
Zinc	1300	V	2.1	0.73	mg/Kg	✱	10/17/12 09:30	10/17/12 22:29	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

**Client Sample ID: ECH-S-IRM1-G2 (0-2ft bgs)**

**Lab Sample ID: 500-51176-2**

Date Collected: 10/11/12 10:45

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 83.2

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	18		1.0	0.22	mg/Kg	✱	10/17/12 09:30	10/17/12 23:00	1
Cadmium	7.9		0.20	0.050	mg/Kg	✱	10/17/12 09:30	10/17/12 23:00	1
Lead	280	B	0.51	0.18	mg/Kg	✱	10/17/12 09:30	10/17/12 23:00	1
Zinc	1700		2.0	0.70	mg/Kg	✱	10/17/12 09:30	10/17/12 23:00	1



# Client Sample Results

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

**Client Sample ID: ECH-S-IRM1-G3 (0-2ft bgs)**

**Lab Sample ID: 500-51176-3**

Date Collected: 10/11/12 11:00

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 77.4

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.9		1.1	0.24	mg/Kg	✱	10/17/12 09:30	10/17/12 23:23	1
Cadmium	3.7		0.22	0.055	mg/Kg	✱	10/17/12 09:30	10/17/12 23:23	1
Lead	130	B	0.55	0.19	mg/Kg	✱	10/17/12 09:30	10/17/12 23:23	1
Zinc	890		2.2	0.76	mg/Kg	✱	10/17/12 09:30	10/17/12 23:23	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

**Client Sample ID: ECH-S-IRM1-G4 (0-2ft bgs)**

**Lab Sample ID: 500-51176-4**

Date Collected: 10/11/12 11:15

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 60.2

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	19		1.4	0.31	mg/Kg	✱	10/17/12 09:30	10/17/12 23:29	1
Cadmium	7.4		0.29	0.071	mg/Kg	✱	10/17/12 09:30	10/17/12 23:29	1
Lead	480	B	0.72	0.25	mg/Kg	✱	10/17/12 09:30	10/17/12 23:29	1
Zinc	1300		2.9	0.98	mg/Kg	✱	10/17/12 09:30	10/17/12 23:29	1

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# Client Sample Results

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

**Client Sample ID: ECH-S-IRM1-G5 (0-2ft bgs)**

**Lab Sample ID: 500-51176-5**

Date Collected: 10/11/12 11:30

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 72.5

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	30		1.4	0.30	mg/Kg	✱	10/17/12 09:30	10/17/12 23:35	1
Cadmium	15		0.28	0.068	mg/Kg	✱	10/17/12 09:30	10/17/12 23:35	1
Lead	330	B	0.69	0.24	mg/Kg	✱	10/17/12 09:30	10/17/12 23:35	1
Zinc	2500		2.8	0.94	mg/Kg	✱	10/17/12 09:30	10/17/12 23:35	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

**Client Sample ID: ECH-S-IRM1-G6 (0-2ft bgs)**

**Lab Sample ID: 500-51176-6**

Date Collected: 10/11/12 11:45

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 57.4

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	11		1.7	0.37	mg/Kg	✱	10/17/12 09:30	10/17/12 23:42	1
Cadmium	7.8		0.34	0.085	mg/Kg	✱	10/17/12 09:30	10/17/12 23:42	1
Lead	190	B	0.85	0.29	mg/Kg	✱	10/17/12 09:30	10/17/12 23:42	1
Zinc	1600		3.4	1.2	mg/Kg	✱	10/17/12 09:30	10/17/12 23:42	1

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# Client Sample Results

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

**Client Sample ID: ECH-S-IRM1-G5 duplicate (0-2ft bgs)**

**Lab Sample ID: 500-51176-7**

**Date Collected: 10/11/12 11:30**

**Matrix: Solid**

**Date Received: 10/11/12 15:30**

**Percent Solids: 69.5**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	7.0		1.3	0.28	mg/Kg	✱	10/17/12 09:30	10/17/12 23:48	1
Cadmium	4.8		0.26	0.064	mg/Kg	✱	10/17/12 09:30	10/17/12 23:48	1
Lead	95	B	0.65	0.22	mg/Kg	✱	10/17/12 09:30	10/17/12 23:48	1
Zinc	1500		2.6	0.89	mg/Kg	✱	10/17/12 09:30	10/17/12 23:48	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

**Client Sample ID: ECH-S-IRM1-G7 (0-2ft bgs)**

**Lab Sample ID: 500-51176-8**

Date Collected: 10/11/12 12:00

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 48.1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	43		2.0	0.44	mg/Kg	✱	10/17/12 09:30	10/17/12 23:54	1
Cadmium	39		0.40	0.099	mg/Kg	✱	10/17/12 09:30	10/17/12 23:54	1
Lead	2100	B	1.0	0.34	mg/Kg	✱	10/17/12 09:30	10/17/12 23:54	1
Zinc	6300		40	14	mg/Kg	✱	10/17/12 09:30	10/18/12 13:10	10



# Client Sample Results

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

**Client Sample ID: ECH-S-IRM1-G8 (0-2ft bgs)**

**Lab Sample ID: 500-51176-9**

Date Collected: 10/11/12 12:15

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 45.5

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	61		2.0	0.43	mg/Kg	✱	10/17/12 09:30	10/18/12 00:00	1
Cadmium	27		0.39	0.097	mg/Kg	✱	10/17/12 09:30	10/18/12 00:00	1
Lead	810	B	0.98	0.34	mg/Kg	✱	10/17/12 09:30	10/18/12 00:00	1
Zinc	4700		39	13	mg/Kg	✱	10/17/12 09:30	10/18/12 13:16	10

# Client Sample Results

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

**Client Sample ID: ECH-S-IRM1-G9 (0-2ft bgs)**

**Lab Sample ID: 500-51176-10**

Date Collected: 10/11/12 12:30

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 64.3

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.9		1.3	0.28	mg/Kg	✱	10/17/12 09:30	10/18/12 00:06	1
Cadmium	2.6		0.26	0.064	mg/Kg	✱	10/17/12 09:30	10/18/12 00:06	1
Lead	60	B	0.65	0.22	mg/Kg	✱	10/17/12 09:30	10/18/12 00:06	1
Zinc	490		2.6	0.89	mg/Kg	✱	10/17/12 09:30	10/18/12 00:06	1

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# Definitions/Glossary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
V	Serial Dilution exceeds the control limits
B	Compound was found in the blank and sample.
F	Duplicate RPD exceeds the control limit
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

## Metals

### Prep Batch: 166178

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51176-1	ECH-S-IRM1-G1 (0-2ft bgs)	Total/NA	Solid	3050B	
500-51176-1 DU	ECH-S-IRM1-G1 (0-2ft bgs)	Total/NA	Solid	3050B	
500-51176-1 MS	ECH-S-IRM1-G1 (0-2ft bgs)	Total/NA	Solid	3050B	
500-51176-1 MSD	ECH-S-IRM1-G1 (0-2ft bgs)	Total/NA	Solid	3050B	
500-51176-2	ECH-S-IRM1-G2 (0-2ft bgs)	Total/NA	Solid	3050B	
500-51176-3	ECH-S-IRM1-G3 (0-2ft bgs)	Total/NA	Solid	3050B	
500-51176-4	ECH-S-IRM1-G4 (0-2ft bgs)	Total/NA	Solid	3050B	
500-51176-5	ECH-S-IRM1-G5 (0-2ft bgs)	Total/NA	Solid	3050B	
500-51176-6	ECH-S-IRM1-G6 (0-2ft bgs)	Total/NA	Solid	3050B	
500-51176-7	ECH-S-IRM1-G5 duplicate (0-2ft bgs)	Total/NA	Solid	3050B	
500-51176-8	ECH-S-IRM1-G7 (0-2ft bgs)	Total/NA	Solid	3050B	
500-51176-9	ECH-S-IRM1-G8 (0-2ft bgs)	Total/NA	Solid	3050B	
500-51176-10	ECH-S-IRM1-G9 (0-2ft bgs)	Total/NA	Solid	3050B	
LCS 500-166178/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-166178/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 166326

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51176-1	ECH-S-IRM1-G1 (0-2ft bgs)	Total/NA	Solid	6010B	166178
500-51176-1 DU	ECH-S-IRM1-G1 (0-2ft bgs)	Total/NA	Solid	6010B	166178
500-51176-1 MS	ECH-S-IRM1-G1 (0-2ft bgs)	Total/NA	Solid	6010B	166178
500-51176-1 MSD	ECH-S-IRM1-G1 (0-2ft bgs)	Total/NA	Solid	6010B	166178
500-51176-2	ECH-S-IRM1-G2 (0-2ft bgs)	Total/NA	Solid	6010B	166178
500-51176-3	ECH-S-IRM1-G3 (0-2ft bgs)	Total/NA	Solid	6010B	166178
500-51176-4	ECH-S-IRM1-G4 (0-2ft bgs)	Total/NA	Solid	6010B	166178
500-51176-5	ECH-S-IRM1-G5 (0-2ft bgs)	Total/NA	Solid	6010B	166178
500-51176-6	ECH-S-IRM1-G6 (0-2ft bgs)	Total/NA	Solid	6010B	166178
500-51176-7	ECH-S-IRM1-G5 duplicate (0-2ft bgs)	Total/NA	Solid	6010B	166178
500-51176-8	ECH-S-IRM1-G7 (0-2ft bgs)	Total/NA	Solid	6010B	166178
500-51176-9	ECH-S-IRM1-G8 (0-2ft bgs)	Total/NA	Solid	6010B	166178
500-51176-10	ECH-S-IRM1-G9 (0-2ft bgs)	Total/NA	Solid	6010B	166178
LCS 500-166178/2-A	Lab Control Sample	Total/NA	Solid	6010B	166178
MB 500-166178/1-A	Method Blank	Total/NA	Solid	6010B	166178

### Analysis Batch: 166418

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51176-8	ECH-S-IRM1-G7 (0-2ft bgs)	Total/NA	Solid	6010B	166178
500-51176-9	ECH-S-IRM1-G8 (0-2ft bgs)	Total/NA	Solid	6010B	166178

## General Chemistry

### Analysis Batch: 165781

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51176-1	ECH-S-IRM1-G1 (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51176-1 DU	ECH-S-IRM1-G1 (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51176-1 MS	ECH-S-IRM1-G1 (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51176-1 MSD	ECH-S-IRM1-G1 (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51176-2	ECH-S-IRM1-G2 (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51176-3	ECH-S-IRM1-G3 (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51176-4	ECH-S-IRM1-G4 (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51176-5	ECH-S-IRM1-G5 (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51176-6	ECH-S-IRM1-G6 (0-2ft bgs)	Total/NA	Solid	Moisture	

# QC Association Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

## General Chemistry (Continued)

### Analysis Batch: 165781 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51176-7	ECH-S-IRM1-G5 duplicate (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51176-8	ECH-S-IRM1-G7 (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51176-9	ECH-S-IRM1-G8 (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51176-10	ECH-S-IRM1-G9 (0-2ft bgs)	Total/NA	Solid	Moisture	

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# QC Sample Results

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

## Method: 6010B - Metals (ICP)

Lab Sample ID: MB 500-166178/1-A

Matrix: Solid

Analysis Batch: 166326

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 166178

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
Arsenic	ND		1.0	0.22	mg/Kg		10/17/12 09:30	10/17/12 22:04	1	
Cadmium	ND		0.20	0.050	mg/Kg		10/17/12 09:30	10/17/12 22:04	1	
Lead	0.421	J	0.50	0.17	mg/Kg		10/17/12 09:30	10/17/12 22:04	1	
Zinc	ND		2.0	0.69	mg/Kg		10/17/12 09:30	10/17/12 22:04	1	

Lab Sample ID: LCS 500-166178/2-A

Matrix: Solid

Analysis Batch: 166326

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 166178

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	8.76		mg/Kg		88	80 - 120
Cadmium	5.00	4.58		mg/Kg		92	80 - 120
Lead	10.0	9.78		mg/Kg		98	80 - 120
Zinc	50.0	45.5		mg/Kg		91	80 - 120

Lab Sample ID: 500-51176-1 MS

Matrix: Solid

Analysis Batch: 166326

Client Sample ID: ECH-S-IRM1-G1 (0-2ft bgs)

Prep Type: Total/NA

Prep Batch: 166178

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	16	V	11.2	27.8		mg/Kg	☼	103	75 - 125
Cadmium	11		5.62	15.7		mg/Kg	☼	80	75 - 125
Lead	420	B	11.2	408	4	mg/Kg	☼	-84	75 - 125
Zinc	1300	V	56.2	1490	4	mg/Kg	☼	299	75 - 125

Lab Sample ID: 500-51176-1 MSD

Matrix: Solid

Analysis Batch: 166326

Client Sample ID: ECH-S-IRM1-G1 (0-2ft bgs)

Prep Type: Total/NA

Prep Batch: 166178

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	16	V	11.8	27.6		mg/Kg	☼	96	75 - 125	1	20
Cadmium	11		5.92	18.4		mg/Kg	☼	122	75 - 125	16	20
Lead	420	B	11.8	437	4	mg/Kg	☼	162	75 - 125	7	20
Zinc	1300	V	59.2	1380	4	mg/Kg	☼	93	75 - 125	8	20

Lab Sample ID: 500-51176-1 DU

Matrix: Solid

Analysis Batch: 166326

Client Sample ID: ECH-S-IRM1-G1 (0-2ft bgs)

Prep Type: Total/NA

Prep Batch: 166178

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	16	V	12.9	F	mg/Kg	☼	23	20
Cadmium	11		9.64		mg/Kg	☼	15	20
Lead	420	B	349		mg/Kg	☼	18	20
Zinc	1300	V	1030	F	mg/Kg	☼	25	20

# Lab Chronicle

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

## Client Sample ID: ECH-S-IRM1-G1 (0-2ft bgs)

Lab Sample ID: 500-51176-1

Date Collected: 10/11/12 10:30

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 81.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166178	10/17/12 09:30	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166326	10/17/12 22:29	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165781	10/13/12 13:36	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-G2 (0-2ft bgs)

Lab Sample ID: 500-51176-2

Date Collected: 10/11/12 10:45

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 83.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166178	10/17/12 09:30	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166326	10/17/12 23:00	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165781	10/13/12 13:36	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-G3 (0-2ft bgs)

Lab Sample ID: 500-51176-3

Date Collected: 10/11/12 11:00

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 77.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166178	10/17/12 09:30	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166326	10/17/12 23:23	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165781	10/13/12 13:36	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-G4 (0-2ft bgs)

Lab Sample ID: 500-51176-4

Date Collected: 10/11/12 11:15

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 60.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166178	10/17/12 09:30	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166326	10/17/12 23:29	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165781	10/13/12 13:36	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-G5 (0-2ft bgs)

Lab Sample ID: 500-51176-5

Date Collected: 10/11/12 11:30

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 72.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166178	10/17/12 09:30	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166326	10/17/12 23:35	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165781	10/13/12 13:36	CMV	TAL CHI

# Lab Chronicle

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

## Client Sample ID: ECH-S-IRM1-G6 (0-2ft bgs)

Lab Sample ID: 500-51176-6

Date Collected: 10/11/12 11:45

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 57.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166178	10/17/12 09:30	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166326	10/17/12 23:42	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165781	10/13/12 13:36	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-G5 duplicate (0-2ft bgs)

Lab Sample ID: 500-51176-7

Date Collected: 10/11/12 11:30

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 69.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166178	10/17/12 09:30	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166326	10/17/12 23:48	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165781	10/13/12 13:36	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-G7 (0-2ft bgs)

Lab Sample ID: 500-51176-8

Date Collected: 10/11/12 12:00

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 48.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166178	10/17/12 09:30	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166326	10/17/12 23:54	TDS	TAL CHI
Total/NA	Analysis	6010B		10	166418	10/18/12 13:10	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	165781	10/13/12 13:36	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-G8 (0-2ft bgs)

Lab Sample ID: 500-51176-9

Date Collected: 10/11/12 12:15

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 45.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166178	10/17/12 09:30	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166326	10/18/12 00:00	TDS	TAL CHI
Total/NA	Analysis	6010B		10	166418	10/18/12 13:16	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	165781	10/13/12 13:36	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-G9 (0-2ft bgs)

Lab Sample ID: 500-51176-10

Date Collected: 10/11/12 12:30

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 64.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166178	10/17/12 09:30	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166326	10/18/12 00:06	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165781	10/13/12 13:36	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-12
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13

Chicago

2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRON

TestAmerica Laborat

<b>Client Contact</b>	<b>Project Manager: Randy Palachek</b>	<b>Site Contact: Keith Thompson</b>	<b>Date: 10/11/12</b>	<b>COC No:</b>
Wanda Davis - URS Corp. ADQM	Tel/Fax: 512.719.6006	Lab Contact: Richard Wright	Carrier: TA Courier	1 of 2 COC
Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300	<b>Analysis Turnaround Time</b>			Job No.
Newark, DE 19713	Calendar (C) or Work Days (W) _____			500-51176
(302) 781-5892	TAT if different from Below _____			SDG No.
(302) 781-5901 Fax	<input checked="" type="checkbox"/> 2 weeks			
Project Name: IRM Sampling	<input type="checkbox"/> 1 week			
Site Location: DuPont East Chicago, Indiana	<input type="checkbox"/> 2 days			
PO#: LBIO-65636, Client Project#: 9267-7720100C-WHO650794	<input type="checkbox"/> 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	Sample Specific
1 ECH-S-IRMI-G1 (0-2 ft bgs)	10-11-12	1030	Composite SOIL		1	N X	
1 ECH-S-IRMI-G1 MS (0-2 ft bgs)	10-11-12	1030	Composite Soil		1	N X	
1 ECH-S-IRMI-G1 MSD (0-2 ft bgs)	10-11-12	1030	Composite Soil		1	N X	
2 ECH-S-IRMI-G2 (0-2 ft bgs)	10-11-12	1045	Composite Soil		1	N X	
3 ECH-S-IRMI-G3 (0-2 ft bgs)	10-11-12	1100	Composite Soil		1	N X	
4 ECH-S-IRMI-G4 (0-2 ft bgs)	10-11-12	1115	Composite Soil		1	N X	
5 ECH-S-IRMI-G5 (0-2 ft bgs)	10-11-12	1130	Composite Soil		1	N X	
6 ECH-S-IRMI-G6 (0-2 ft bgs)	10-11-12	1145	Composite Soil		1	N X	
7 ECH-S-IRMI-G5 duplicate (0-2 ft bgs)	10-11-12	1130	Composite Soil		1	N X	
<del>8 ECH-S-IRMI-G6 (0-2 ft bgs)</del>	<del>10-11-12</del>	<del>1145</del>	<del>Composite Soil</del>		<del>1</del>	<del>N X</del>	
8 ECH-S-IRMI-G7 (0-2 ft bgs)	10-11-12	1200	Composite Soil		1	N X	
9 ECH-S-IRMI-G8 (0-2 ft bgs)	10-11-12	1215	Composite Soil		1	N X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other \_\_\_\_\_

Possible Hazard Identification  
 Non-Hazard     Flammable     Skin Irritant     Poison B     Unknown

Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client     Disposal By Lab     Archive For \_\_\_\_\_ Month

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company: Parsons	Date/Time: 10-11-12 1500	Received by:	Company: Test America	Date/Time: 10/11/12 1500
Relinquished by:	Company: Test America	Date/Time: 10/11/12 1530	Received by:	Company: TA	Date/Time: 10/11/12 1530
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:







## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-51176-1

**Login Number: 51176**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Lunt, Jeff T**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	4.6
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-51176-2  
Client Project/Site: East Chicago

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
11/6/2012 1:33:30 PM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-2

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**Job ID: 500-51176-2**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-51176-2**

**Comments**

No additional comments.

**Receipt**

The samples were received on 10/11/2012 3:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.6° C.

**Metals**

No analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-2

## Client Sample ID: ECH-S-IRM1-G5 (0-2ft bgs)

Lab Sample ID: 500-51176-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	12		1.2	0.27	mg/Kg	1		☼	6010B	Total/NA
Cadmium	7.6		0.25	0.061	mg/Kg	1		☼	6010B	Total/NA
Lead	130		0.62	0.21	mg/Kg	1		☼	6010B	Total/NA
Zinc	1500	B	2.5	0.85	mg/Kg	1		☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-G5 duplicate (0-2ft bgs)

Lab Sample ID: 500-51176-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	11		1.3	0.29	mg/Kg	1		☼	6010B	Total/NA
Cadmium	7.4		0.26	0.065	mg/Kg	1		☼	6010B	Total/NA
Lead	120		0.66	0.23	mg/Kg	1		☼	6010B	Total/NA
Zinc	1400	B	2.6	0.91	mg/Kg	1		☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-2

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Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI

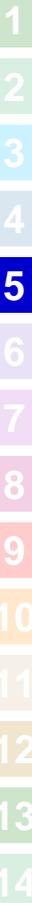
---

**Protocol References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Sample Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-2

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-51176-5	ECH-S-IRM1-G5 (0-2ft bgs)	Solid	10/11/12 11:30	10/11/12 15:30
500-51176-7	ECH-S-IRM1-G5 duplicate (0-2ft bgs)	Solid	10/11/12 11:30	10/11/12 15:30

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# Client Sample Results

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-51176-2

**Client Sample ID: ECH-S-IRM1-G5 (0-2ft bgs)**

**Lab Sample ID: 500-51176-5**

Date Collected: 10/11/12 11:30

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 72.5

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	12		1.2	0.27	mg/Kg	☆☆	11/02/12 16:30	11/03/12 12:29	1
Cadmium	7.6		0.25	0.061	mg/Kg	☆☆	11/02/12 16:30	11/03/12 12:29	1
Lead	130		0.62	0.21	mg/Kg	☆☆	11/02/12 16:30	11/03/12 12:29	1
Zinc	1500	B	2.5	0.85	mg/Kg	☆☆	11/02/12 16:30	11/03/12 12:29	1



# Client Sample Results

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-51176-2

**Client Sample ID: ECH-S-IRM1-G5 duplicate (0-2ft bgs)**

**Lab Sample ID: 500-51176-7**

Date Collected: 10/11/12 11:30

Matrix: Solid

Date Received: 10/11/12 15:30

Percent Solids: 69.5

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	11		1.3	0.29	mg/Kg	✱	11/02/12 16:30	11/03/12 12:35	1
Cadmium	7.4		0.26	0.065	mg/Kg	✱	11/02/12 16:30	11/03/12 12:35	1
Lead	120		0.66	0.23	mg/Kg	✱	11/02/12 16:30	11/03/12 12:35	1
Zinc	1400	B	2.6	0.91	mg/Kg	✱	11/02/12 16:30	11/03/12 12:35	1



# Definitions/Glossary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-2

## Qualifiers

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
RER	Relative error ratio
DER	Duplicate error ratio (normalized absolute difference)
DLC	Decision level concentration
RL	Reporting Limit or Requested Limit (Radiochemistry only)

# QC Association Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-2

## Metals

### Prep Batch: 168366

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51176-5	ECH-S-IRM1-G5 (0-2ft bgs)	Total/NA	Solid	3050B	
500-51176-7	ECH-S-IRM1-G5 duplicate (0-2ft bgs)	Total/NA	Solid	3050B	
LCS 500-168366/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-168366/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 168470

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51176-5	ECH-S-IRM1-G5 (0-2ft bgs)	Total/NA	Solid	6010B	168366
500-51176-7	ECH-S-IRM1-G5 duplicate (0-2ft bgs)	Total/NA	Solid	6010B	168366
LCS 500-168366/2-A	Lab Control Sample	Total/NA	Solid	6010B	168366
MB 500-168366/1-A	Method Blank	Total/NA	Solid	6010B	168366

# QC Sample Results

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-2

## Method: 6010B - Metals (ICP)

Lab Sample ID: MB 500-168366/1-A  
Matrix: Solid  
Analysis Batch: 168470

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 168366

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		11/02/12 16:30	11/03/12 12:16	1
Cadmium	ND		0.20	0.050	mg/Kg		11/02/12 16:30	11/03/12 12:16	1
Lead	ND		0.50	0.17	mg/Kg		11/02/12 16:30	11/03/12 12:16	1
Zinc	0.705	J	2.0	0.69	mg/Kg		11/02/12 16:30	11/03/12 12:16	1

Lab Sample ID: LCS 500-168366/2-A  
Matrix: Solid  
Analysis Batch: 168470

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 168366

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.21		mg/Kg		92	80 - 120
Cadmium	5.00	4.74		mg/Kg		95	80 - 120
Lead	10.0	9.79		mg/Kg		98	80 - 120
Zinc	50.0	47.7		mg/Kg		95	80 - 120

# Lab Chronicle

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-2

**Client Sample ID: ECH-S-IRM1-G5 (0-2ft bgs)**

**Lab Sample ID: 500-51176-5**

**Date Collected: 10/11/12 11:30**

**Matrix: Solid**

**Date Received: 10/11/12 15:30**

**Percent Solids: 72.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			168366	11/02/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168470	11/03/12 12:29	PJ	TAL CHI

**Client Sample ID: ECH-S-IRM1-G5 duplicate (0-2ft bgs)**

**Lab Sample ID: 500-51176-7**

**Date Collected: 10/11/12 11:30**

**Matrix: Solid**

**Date Received: 10/11/12 15:30**

**Percent Solids: 69.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			168366	11/02/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168470	11/03/12 12:35	PJ	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51176-2

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13

Chicago

2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRON

TestAmerica Laborat

Client Contact		Project Manager: Randy Palachek		Site Contact: Keith Thompson		Date: 10/11/12		COC No:	
Wanda Davis - URS Corp. ADQM		Tel/Fax: 512.719.6006		Lab Contact: Richard Wright		Carrier: TA Courier		1 of 2 COC	
Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300		Analysis Turnaround Time		Filtered Sample As, Cd, Pb, Zn				Job No.	
Newark, DE 19713		Calendar (C) or Work Days (W)						500-51176	
(302) 781-5892		TAT if different from Below						SDG No.	
(302) 781-5901 Fax		<input checked="" type="checkbox"/> 2 weeks							
Project Name: IRM Sampling		<input type="checkbox"/> 1 week							
Site Location: DuPont East Chicago, Indiana		<input type="checkbox"/> 2 days							
PO#: LBIO-65636, Client Project#: 9267-7720100C-WHO650794		<input type="checkbox"/> 1 day							

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	Sample Specific
1 ECH-S-IRMI-G1 (0-2 ft bgs)	10-11-12	1030	Composite SOIL		1	N X	
1 ECH-S-IRMI-G1 MS (0-2 ft bgs)	10-11-12	1030	Composite Soil		1	N X	
1 ECH-S-IRMI-G1 MSD (0-2 ft bgs)	10-11-12	1030	Composite Soil		1	N X	
2 ECH-S-IRMI-G2 (0-2 ft bgs)	10-11-12	1045	Composite Soil		1	N X	
3 ECH-S-IRMI-G3 (0-2 ft bgs)	10-11-12	1100	Composite Soil		1	N X	
4 ECH-S-IRMI-G4 (0-2 ft bgs)	10-11-12	1115	Composite Soil		1	N X	
5 ECH-S-IRMI-G5 (0-2 ft bgs)	10-11-12	1130	Composite Soil		1	N X	
6 ECH-S-IRMI-G6 (0-2 ft bgs)	10-11-12	1145	Composite Soil		1	N X	
7 ECH-S-IRMI-G5 duplicate (0-2 ft bgs)	10-11-12	1130	Composite Soil		1	N X	
<del>8 ECH-S-IRMI-G6 (0-2 ft bgs)</del>	<del>10-11-12</del>	<del>1145</del>	<del>Composite Soil</del>		<del>1</del>	<del>N X</del>	
8 ECH-S-IRMI-G7 (0-2 ft bgs)	10-11-12	1200	Composite Soil		1	N X	
9 ECH-S-IRMI-G8 (0-2 ft bgs)	10-11-12	1215	Composite Soil		1	N X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other

Possible Hazard Identification  
 Non-Hazard     Flammable     Skin Irritant     Poison B     Unknown

Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client     Disposal By Lab     Archive For \_\_\_\_\_ Month

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company: Parsons	Date/Time: 10-11-12 1500	Received by:	Company: Test America	Date/Time: 10/11/12 1500
Relinquished by:	Company: Test America	Date/Time: 10/11/12 1530	Received by:	Company: TA	Date/Time: 10/11/12 1530
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:



Chicago  
2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

### Chain of Custody Record

**TestAmerica**  
THE LEADER IN ENVIRONM

TestAmerica Laboratc

<b>Client Contact</b>	<b>Project Manager: Randy Palachek</b>	<b>Site Contact: Keith Thompson</b>	<b>Date: 10/11/12</b>	<b>COC No:</b>
Wanda Davis - URS Corp. ADQM	Tel/Fax: 512.719.6006	<b>Lab Contact: Richard Wright</b>	<b>Carrier: TA Courier</b>	1 of 2 COC:
Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300	<b>Analysis Turnaround Time</b>			Job No.
Newark, DE 19713	Calendar (C) or Work Days (W)			500-51176
(302) 781-5892	TAT if different from Below _____			SDG No.
(302) 781-5901 Fax	<input checked="" type="checkbox"/> 2 weeks			
Project Name: IRM Sampling	<input type="checkbox"/> 1 week			
Site Location: DuPont East Chicago, Indiana	<input type="checkbox"/> 2 days			
PO#: LBIO-65636, Client Project#: 9267-7720100C-WH0650794	<input type="checkbox"/> 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	As, Cd, Pb, Zn	Sample Specific
1 ECH-S-IRM1-G1 (0-2 ft bgs)	10-11-12	1030	Composite	SOIL	1	N	X	
1 ECH-S-IRM1-G1 MS (0-2 ft bgs)	10-11-12	1030	Composite	Soil	1	N	X	
1 ECH-S-IRM1-G1 MSD (0-2 ft bgs)	10-11-12	1030	Composite	Soil	1	N	X	
2 ECH-S-IRM1-G2 (0-2 ft bgs)	10-11-12	1045	Composite	Soil	1	N	X	
3 ECH-S-IRM1-G3 (0-2 ft bgs)	10-11-12	1100	Composite	Soil	1	N	X	
4 ECH-S-IRM1-G4 (0-2 ft bgs)	10-11-12	1115	Composite	Soil	1	N	X	
5 ECH-S-IRM1-G5 (0-2 ft bgs)	10-11-12	1130	Composite	Soil	1	N	X	
6 ECH-S-IRM1-G6 (0-2 ft bgs)	10-11-12	1145	Composite	Soil	1	N	X	
7 ECH-S-IRM1-G5 duplicate (0-2 ft bgs)	10-11-12	1130	Composite	Soil	1	N	X	
<del>8 ECH-S-IRM1-G6 (0-2 ft bgs)</del>	<del>10-11-12</del>	<del>1145</del>	<del>Composite</del>	<del>Soil</del>	<del>1</del>	<del>N</del>	<del>X</del>	
8 ECH-S-IRM1-G7 (0-2 ft bgs)	10-11-12	1200	Composite	Soil	1	N	X	
9 ECH-S-IRM1-G8 (0-2 ft bgs)	10-11-12	1215	Composite	Soil	1	N	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other \_\_\_\_\_

Possible Hazard Identification  
 Non-Hazard     Flammable     Skin Irritant     Poison B     Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client     Disposal By Lab     Archive For \_\_\_\_\_ Month

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company: Parsons	Date/Time: 10-11-12 1500	Received by:	Company: Test America	Date/Time: 10-11-12 1500
Relinquished by:	Company: Test America	Date/Time: 10-11-12 1530	Received by:	Company: TA	Date/Time: 10-11-12 1530
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:



Chicago  
2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

### Chain of Custody Record

**TestAmerica**  
THE LEADER IN ENVIRONM

TestAmerica Laboratc

Client Contact		Project Manager: Randy Palachek		Site Contact: Keith Thompson		Date: 10/11/12		COC No:	
Wanda Davis - URS Corp. ADQM		Tel/Fax: 512.719.6006		Lab Contact: Richard Wright		Carrier: TA Courier		1 of 2 COC:	
Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300		Analysis Turnaround Time							
Newark, DE 19713		Calendar (C) or Work Days (W)							
(302) 781-5892		TAT if different from Below _____							
(302) 781-5801 Fax		<input checked="" type="checkbox"/> 2 weeks		<input type="checkbox"/> 1 week		<input type="checkbox"/> 2 days		<input type="checkbox"/> 1 day	
Project Name: IRM Sampling		Filtered Sample As, Cd, Pb, Zn							
Site Location: DuPont East Chicago, Indiana									
PO#: LBIO-65636, Client Project#: 9267-7720100C-WH0850794									
LBIO-6644 WH06507754 LBIO-6642 WH17129 1011511299 Sample Identification		Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Job No. 500-51176		SDG No.
Sample Specific									
1 ECH-S-IRM1-G1 (0-2 ft bgs)		10-11-12	1030	Composite	SOIL	1	N	X	
1 ECH-S-IRM1-G1 MS (0-2 ft bgs)		10-11-12	1030	Composite	Soil	1	N	X	
1 ECH-S-IRM1-G1 MSD (0-2 ft bgs)		10-11-12	1030	Composite	Soil	1	N	X	
2 ECH-S-IRM1-G2 (0-2 ft bgs)		10-11-12	1045	Composite	Soil	1	N	X	
3 ECH-S-IRM1-G3 (0-2 ft bgs)		10-11-12	1100	Composite	Soil	1	N	X	
4 ECH-S-IRM1-G4 (0-2 ft bgs)		10-11-12	1115	Composite	Soil	1	N	X	
5 ECH-S-IRM1-G5 (0-2 ft bgs)		10-11-12	1120	Composite	Soil	1	N	X	
6 ECH-S-IRM1-G6 (0-2 ft bgs)		10-11-12	1145	Composite	Soil	1	N	X	
7 ECH-S-IRM1-G5 duplicate (0-2 ft bgs)		10-11-12	1130	Composite	Soil	1	N	X	
<del>ECH-S-IRM1-G6 (0-2 ft bgs)</del>		<del>10-11-12</del>	<del>1145</del>	<del>Composite</del>	<del>Soil</del>	<del>1</del>	<del>N</del>	<del>X</del>	
8 ECH-S-IRM1-G7 (0-2 ft bgs)		10-11-12	1200	Composite	Soil	1	N	X	
9 ECH-S-IRM1-G8 (0-2 ft bgs)		10-11-12	1215	Composite	Soil	1	N	X	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other									
Possible Hazard Identification					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)				
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown					<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Month				
Special Instructions/QC Requirements & Comments:									
Relinquished by:		Company: Parsons		Date/Time: 10-11-12 1500		Received by:		Company: Test America	
Relinquished by:		Company: Test America		Date/Time: 10/11/12 1530		Received by:		Company: TA	
Relinquished by:		Company:		Date/Time:		Received by:		Company:	



## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-51176-2

**Login Number: 51176**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Lunt, Jeff T**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	4.6
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-51234-1  
Client Project/Site: East Chicago  
Revision: 1

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
12/21/2012 11:10:44 AM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

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**Job ID: 500-51234-1**

---

**Laboratory: TestAmerica Chicago**

---

**Narrative**

---

**Job Narrative**  
**500-51234-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 10/12/2012 4:20 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.4° C.

**Revised Report**

Sample ID changes made by Parsons - see amended COCs.

**Metals**

Method(s) 6010B: The matrix duplicate %RPD for sample 500-51234-7 was outside of the control limits for Pb.

Method(s) 6010B: The matrix spike / matrix spike duplicate (MS/MSD) precision for sample 500-51234-7 was outside control limits for Pb. The associated laboratory control sample (LCS) met acceptance criteria.

No other analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

## Client Sample ID: ECH-S-IRM1-HW-H1 (0-2ft bgs)

Lab Sample ID: 500-51234-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	19		1.3	0.29	mg/Kg	1	☼	6010B	Total/NA
Cadmium	3.9		0.27	0.066	mg/Kg	1	☼	6010B	Total/NA
Lead	270	B	0.67	0.23	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-H2 (0-2ft bgs)

Lab Sample ID: 500-51234-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	79		1.5	0.33	mg/Kg	1	☼	6010B	Total/NA
Cadmium	7.3		0.30	0.075	mg/Kg	1	☼	6010B	Total/NA
Lead	1200	B	0.76	0.26	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-H3 (0-2ft bgs)

Lab Sample ID: 500-51234-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	47		2.0	0.44	mg/Kg	1	☼	6010B	Total/NA
Cadmium	7.7		0.40	0.10	mg/Kg	1	☼	6010B	Total/NA
Lead	950	B	1.0	0.35	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-H4 (0-2ft bgs)

Lab Sample ID: 500-51234-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	79		1.8	0.38	mg/Kg	1	☼	6010B	Total/NA
Cadmium	9.9		0.35	0.087	mg/Kg	1	☼	6010B	Total/NA
Lead	930	B	0.88	0.30	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D4 (0-2ft bgs)

Lab Sample ID: 500-51234-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	38		1.2	0.26	mg/Kg	1	☼	6010B	Total/NA
Cadmium	97		0.24	0.058	mg/Kg	1	☼	6010B	Total/NA
Lead	1700	B	0.59	0.20	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D8 (0-2ft bgs)

Lab Sample ID: 500-51234-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	12		1.2	0.26	mg/Kg	1	☼	6010B	Total/NA
Cadmium	4.9		0.24	0.058	mg/Kg	1	☼	6010B	Total/NA
Lead	120	B	0.59	0.20	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-E4-N,E,W WALLS (0-2ft bgs)

Lab Sample ID: 500-51234-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	1.7		0.92	0.20	mg/Kg	1	☼	6010B	Total/NA
Cadmium	4.3		0.18	0.046	mg/Kg	1	☼	6010B	Total/NA
Lead	220	B	0.46	0.16	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-E4-SOUTH WALL (0-2ft bgs)

Lab Sample ID: 500-51234-8

TestAmerica Chicago

# Detection Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

**Client Sample ID: ECH-S-IRM1-HW-E4-SOUTH WALL (0-2ft bgs) (Continued)**

**Lab Sample ID: 500-51234-8**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	45		1.0	0.23	mg/Kg	1		*	6010B	Total/NA
Cadmium	75		0.21	0.051	mg/Kg	1		*	6010B	Total/NA
Lead	4600	B	0.52	0.18	mg/Kg	1		*	6010B	Total/NA

**Client Sample ID: ECH-S-IRM1-HW-E4-FLOOR (2-2.5 ft bgs)**

**Lab Sample ID: 500-51234-9**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	27		0.97	0.21	mg/Kg	1		*	6010B	Total/NA
Cadmium	63		0.19	0.048	mg/Kg	1		*	6010B	Total/NA
Lead	14000	B	24	8.3	mg/Kg	50		*	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

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Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

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**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

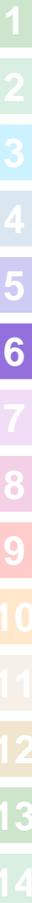
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# Sample Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-51234-1	ECH-S-IRM1-HW-H1 (0-2ft bgs)	Solid	10/12/12 11:00	10/12/12 16:20
500-51234-2	ECH-S-IRM1-HW-H2 (0-2ft bgs)	Solid	10/12/12 11:15	10/12/12 16:20
500-51234-3	ECH-S-IRM1-HW-H3 (0-2ft bgs)	Solid	10/12/12 11:30	10/12/12 16:20
500-51234-4	ECH-S-IRM1-HW-H4 (0-2ft bgs)	Solid	10/12/12 11:40	10/12/12 16:20
500-51234-5	ECH-S-IRM1-HW-D4 (0-2ft bgs)	Solid	10/12/12 11:50	10/12/12 16:20
500-51234-6	ECH-S-IRM1-HW-D8 (0-2ft bgs)	Solid	10/12/12 12:00	10/12/12 16:20
500-51234-7	ECH-S-IRM1-HW-E4-N,E,W WALLS (0-2ft bgs)	Solid	10/12/12 14:30	10/12/12 16:20
500-51234-8	ECH-S-IRM1-HW-E4-SOUTH WALL (0-2ft bgs)	Solid	10/12/12 14:40	10/12/12 16:20
500-51234-9	ECH-S-IRM1-HW-E4-FLOOR (2-2.5 ft bgs)	Solid	10/12/12 14:50	10/12/12 16:20



# Client Sample Results

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

**Client Sample ID: ECH-S-IRM1-HW-H1 (0-2ft bgs)**

**Lab Sample ID: 500-51234-1**

Date Collected: 10/12/12 11:00

Matrix: Solid

Date Received: 10/12/12 16:20

Percent Solids: 69.9

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	19		1.3	0.29	mg/Kg	☼	10/15/12 10:10	10/15/12 20:52	1
Cadmium	3.9		0.27	0.066	mg/Kg	☼	10/15/12 10:10	10/15/12 20:52	1
Lead	270	B	0.67	0.23	mg/Kg	☼	10/15/12 10:10	10/15/12 20:52	1

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# Client Sample Results

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

**Client Sample ID: ECH-S-IRM1-HW-H2 (0-2ft bgs)**

**Lab Sample ID: 500-51234-2**

Date Collected: 10/12/12 11:15

Matrix: Solid

Date Received: 10/12/12 16:20

Percent Solids: 62.7

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	79		1.5	0.33	mg/Kg	✱	10/15/12 10:10	10/15/12 20:59	1
Cadmium	7.3		0.30	0.075	mg/Kg	✱	10/15/12 10:10	10/15/12 20:59	1
Lead	1200	B	0.76	0.26	mg/Kg	✱	10/15/12 10:10	10/15/12 20:59	1

# Client Sample Results

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

**Client Sample ID: ECH-S-IRM1-HW-H3 (0-2ft bgs)**

**Lab Sample ID: 500-51234-3**

Date Collected: 10/12/12 11:30

Matrix: Solid

Date Received: 10/12/12 16:20

Percent Solids: 48.2

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	47		2.0	0.44	mg/Kg	✱	10/15/12 10:10	10/15/12 21:05	1
Cadmium	7.7		0.40	0.10	mg/Kg	✱	10/15/12 10:10	10/15/12 21:05	1
Lead	950	B	1.0	0.35	mg/Kg	✱	10/15/12 10:10	10/15/12 21:05	1

# Client Sample Results

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

**Client Sample ID: ECH-S-IRM1-HW-H4 (0-2ft bgs)**

**Lab Sample ID: 500-51234-4**

Date Collected: 10/12/12 11:40

Matrix: Solid

Date Received: 10/12/12 16:20

Percent Solids: 49.9

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	79		1.8	0.38	mg/Kg	✱	10/15/12 10:10	10/15/12 21:11	1
Cadmium	9.9		0.35	0.087	mg/Kg	✱	10/15/12 10:10	10/15/12 21:11	1
Lead	930	B	0.88	0.30	mg/Kg	✱	10/15/12 10:10	10/15/12 21:11	1

# Client Sample Results

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

**Client Sample ID: ECH-S-IRM1-HW-D4 (0-2ft bgs)**

**Lab Sample ID: 500-51234-5**

Date Collected: 10/12/12 11:50

Matrix: Solid

Date Received: 10/12/12 16:20

Percent Solids: 83.4

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	38		1.2	0.26	mg/Kg	✱	10/15/12 10:10	10/15/12 21:17	1
Cadmium	97		0.24	0.058	mg/Kg	✱	10/15/12 10:10	10/15/12 21:17	1
Lead	1700	B	0.59	0.20	mg/Kg	✱	10/15/12 10:10	10/15/12 21:17	1

# Client Sample Results

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

**Client Sample ID: ECH-S-IRM1-HW-D8 (0-2ft bgs)**

**Lab Sample ID: 500-51234-6**

**Date Collected: 10/12/12 12:00**

**Matrix: Solid**

**Date Received: 10/12/12 16:20**

**Percent Solids: 84.3**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	12		1.2	0.26	mg/Kg	✱	10/15/12 10:10	10/15/12 21:23	1
Cadmium	4.9		0.24	0.058	mg/Kg	✱	10/15/12 10:10	10/15/12 21:23	1
Lead	120	B	0.59	0.20	mg/Kg	✱	10/15/12 10:10	10/15/12 21:23	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

**Client Sample ID: ECH-S-IRM1-HW-E4-N,E,W WALLS (0-2ft bgs)**

**Lab Sample ID: 500-51234-7**

**Date Collected: 10/12/12 14:30**

**Matrix: Solid**

**Date Received: 10/12/12 16:20**

**Percent Solids: 95.9**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.7		0.92	0.20	mg/Kg	☼	10/15/12 10:10	10/15/12 21:30	1
Cadmium	4.3		0.18	0.046	mg/Kg	☼	10/15/12 10:10	10/15/12 21:30	1
Lead	220	B	0.46	0.16	mg/Kg	☼	10/15/12 10:10	10/15/12 21:30	1

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# Client Sample Results

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

**Client Sample ID: ECH-S-IRM1-HW-E4-SOUTH WALL (0-2ft  
bgs)**

**Lab Sample ID: 500-51234-8**

**Date Collected: 10/12/12 14:40**

**Matrix: Solid**

**Date Received: 10/12/12 16:20**

**Percent Solids: 95.8**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	45		1.0	0.23	mg/Kg	☼	10/15/12 10:10	10/15/12 22:15	1
Cadmium	75		0.21	0.051	mg/Kg	☼	10/15/12 10:10	10/15/12 22:15	1
Lead	4600	B	0.52	0.18	mg/Kg	☼	10/15/12 10:10	10/15/12 22:15	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

**Client Sample ID: ECH-S-IRM1-HW-E4-FLOOR (2-2.5 ft bgs)**

**Lab Sample ID: 500-51234-9**

Date Collected: 10/12/12 14:50

Matrix: Solid

Date Received: 10/12/12 16:20

Percent Solids: 95.4

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	27		0.97	0.21	mg/Kg	☼	10/15/12 10:10	10/15/12 22:21	1
Cadmium	63		0.19	0.048	mg/Kg	☼	10/15/12 10:10	10/15/12 22:21	1
Lead	14000	B	24	8.3	mg/Kg	☼	10/15/12 10:10	10/16/12 10:25	50

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# Definitions/Glossary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
F	Duplicate RPD exceeds the control limit
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
F	RPD of the MS and MSD exceeds the control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

## Metals

### Prep Batch: 165856

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51234-1	ECH-S-IRM1-HW-H1 (0-2ft bgs)	Total/NA	Solid	3050B	
500-51234-2	ECH-S-IRM1-HW-H2 (0-2ft bgs)	Total/NA	Solid	3050B	
500-51234-3	ECH-S-IRM1-HW-H3 (0-2ft bgs)	Total/NA	Solid	3050B	
500-51234-4	ECH-S-IRM1-HW-H4 (0-2ft bgs)	Total/NA	Solid	3050B	
500-51234-5	ECH-S-IRM1-HW-D4 (0-2ft bgs)	Total/NA	Solid	3050B	
500-51234-6	ECH-S-IRM1-HW-D8 (0-2ft bgs)	Total/NA	Solid	3050B	
500-51234-7	ECH-S-IRM1-HW-E4-N,E,W WALLS (0-2ft bgs)	Total/NA	Solid	3050B	
500-51234-7 DU	ECH-S-IRM1-HW-E4-N,E,W WALLS (0-2ft bgs)	Total/NA	Solid	3050B	
500-51234-7 MS	ECH-S-IRM1-HW-E4-N,E,W WALLS (0-2ft bgs)	Total/NA	Solid	3050B	
500-51234-7 MSD	ECH-S-IRM1-HW-E4-N,E,W WALLS (0-2ft bgs)	Total/NA	Solid	3050B	
500-51234-8	ECH-S-IRM1-HW-E4-SOUTH WALL (0-2ft bgs)	Total/NA	Solid	3050B	
500-51234-9	ECH-S-IRM1-HW-E4-FLOOR (2-2.5 ft bgs)	Total/NA	Solid	3050B	
LCS 500-165856/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-165856/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 165976

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51234-1	ECH-S-IRM1-HW-H1 (0-2ft bgs)	Total/NA	Solid	6010B	165856
500-51234-2	ECH-S-IRM1-HW-H2 (0-2ft bgs)	Total/NA	Solid	6010B	165856
500-51234-3	ECH-S-IRM1-HW-H3 (0-2ft bgs)	Total/NA	Solid	6010B	165856
500-51234-4	ECH-S-IRM1-HW-H4 (0-2ft bgs)	Total/NA	Solid	6010B	165856
500-51234-5	ECH-S-IRM1-HW-D4 (0-2ft bgs)	Total/NA	Solid	6010B	165856
500-51234-6	ECH-S-IRM1-HW-D8 (0-2ft bgs)	Total/NA	Solid	6010B	165856
500-51234-7	ECH-S-IRM1-HW-E4-N,E,W WALLS (0-2ft bgs)	Total/NA	Solid	6010B	165856
500-51234-7 DU	ECH-S-IRM1-HW-E4-N,E,W WALLS (0-2ft bgs)	Total/NA	Solid	6010B	165856
500-51234-7 MS	ECH-S-IRM1-HW-E4-N,E,W WALLS (0-2ft bgs)	Total/NA	Solid	6010B	165856
500-51234-7 MSD	ECH-S-IRM1-HW-E4-N,E,W WALLS (0-2ft bgs)	Total/NA	Solid	6010B	165856
500-51234-8	ECH-S-IRM1-HW-E4-SOUTH WALL (0-2ft bgs)	Total/NA	Solid	6010B	165856
500-51234-9	ECH-S-IRM1-HW-E4-FLOOR (2-2.5 ft bgs)	Total/NA	Solid	6010B	165856
LCS 500-165856/2-A	Lab Control Sample	Total/NA	Solid	6010B	165856
MB 500-165856/1-A	Method Blank	Total/NA	Solid	6010B	165856

### Analysis Batch: 166046

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51234-9	ECH-S-IRM1-HW-E4-FLOOR (2-2.5 ft bgs)	Total/NA	Solid	6010B	165856

## General Chemistry

### Analysis Batch: 165768

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51234-1	ECH-S-IRM1-HW-H1 (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51234-2	ECH-S-IRM1-HW-H2 (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51234-3	ECH-S-IRM1-HW-H3 (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51234-4	ECH-S-IRM1-HW-H4 (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51234-5	ECH-S-IRM1-HW-D4 (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51234-6	ECH-S-IRM1-HW-D8 (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51234-7	ECH-S-IRM1-HW-E4-N,E,W WALLS (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51234-8	ECH-S-IRM1-HW-E4-SOUTH WALL (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51234-9	ECH-S-IRM1-HW-E4-FLOOR (2-2.5 ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-165856/1-A**  
**Matrix: Solid**  
**Analysis Batch: 165976**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 165856**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		10/15/12 10:10	10/15/12 20:40	1
Cadmium	ND		0.20	0.050	mg/Kg		10/15/12 10:10	10/15/12 20:40	1
Lead	0.348	J	0.50	0.17	mg/Kg		10/15/12 10:10	10/15/12 20:40	1

**Lab Sample ID: LCS 500-165856/2-A**  
**Matrix: Solid**  
**Analysis Batch: 165976**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 165856**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	8.63		mg/Kg		86	80 - 120
Cadmium	5.00	4.55		mg/Kg		91	80 - 120
Lead	10.0	9.66		mg/Kg		97	80 - 120

**Lab Sample ID: 500-51234-7 MS**  
**Matrix: Solid**  
**Analysis Batch: 165976**

**Client Sample ID: ECH-S-IRM1-HW-E4-N,E,W WALLS (0-2ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 165856**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.7		10.4	10.9		mg/Kg	✱	88	75 - 125
Cadmium	4.3		5.21	8.59		mg/Kg	✱	82	75 - 125
Lead	220	B	10.4	214	4	mg/Kg	✱	-94	75 - 125

**Lab Sample ID: 500-51234-7 MSD**  
**Matrix: Solid**  
**Analysis Batch: 165976**

**Client Sample ID: ECH-S-IRM1-HW-E4-N,E,W WALLS (0-2ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 165856**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	1.7		8.93	9.69		mg/Kg	✱	89	75 - 125	11	20
Cadmium	4.3		4.46	8.08		mg/Kg	✱	85	75 - 125	6	20
Lead	220	B	8.93	140	4 F	mg/Kg	✱	-943	75 - 125	42	20

**Lab Sample ID: 500-51234-7 DU**  
**Matrix: Solid**  
**Analysis Batch: 165976**

**Client Sample ID: ECH-S-IRM1-HW-E4-N,E,W WALLS (0-2ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 165856**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	1.7		1.45		mg/Kg	✱	18	20
Cadmium	4.3		3.92		mg/Kg	✱	9	20
Lead	220	B	79.2	F	mg/Kg	✱	96	20

# Lab Chronicle

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

## Client Sample ID: ECH-S-IRM1-HW-H1 (0-2ft bgs)

Lab Sample ID: 500-51234-1

Date Collected: 10/12/12 11:00

Matrix: Solid

Date Received: 10/12/12 16:20

Percent Solids: 69.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			165856	10/15/12 10:10	LAH	TAL CHI
Total/NA	Analysis	6010B		1	165976	10/15/12 20:52	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165768	10/13/12 09:35	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-H2 (0-2ft bgs)

Lab Sample ID: 500-51234-2

Date Collected: 10/12/12 11:15

Matrix: Solid

Date Received: 10/12/12 16:20

Percent Solids: 62.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			165856	10/15/12 10:10	LAH	TAL CHI
Total/NA	Analysis	6010B		1	165976	10/15/12 20:59	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165768	10/13/12 09:35	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-H3 (0-2ft bgs)

Lab Sample ID: 500-51234-3

Date Collected: 10/12/12 11:30

Matrix: Solid

Date Received: 10/12/12 16:20

Percent Solids: 48.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			165856	10/15/12 10:10	LAH	TAL CHI
Total/NA	Analysis	6010B		1	165976	10/15/12 21:05	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165768	10/13/12 09:35	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-H4 (0-2ft bgs)

Lab Sample ID: 500-51234-4

Date Collected: 10/12/12 11:40

Matrix: Solid

Date Received: 10/12/12 16:20

Percent Solids: 49.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			165856	10/15/12 10:10	LAH	TAL CHI
Total/NA	Analysis	6010B		1	165976	10/15/12 21:11	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165768	10/13/12 09:35	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-D4 (0-2ft bgs)

Lab Sample ID: 500-51234-5

Date Collected: 10/12/12 11:50

Matrix: Solid

Date Received: 10/12/12 16:20

Percent Solids: 83.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			165856	10/15/12 10:10	LAH	TAL CHI
Total/NA	Analysis	6010B		1	165976	10/15/12 21:17	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165768	10/13/12 09:35	CMV	TAL CHI

# Lab Chronicle

Client: URS Corporation  
Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

## Client Sample ID: ECH-S-IRM1-HW-D8 (0-2ft bgs)

Lab Sample ID: 500-51234-6

Date Collected: 10/12/12 12:00

Matrix: Solid

Date Received: 10/12/12 16:20

Percent Solids: 84.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			165856	10/15/12 10:10	LAH	TAL CHI
Total/NA	Analysis	6010B		1	165976	10/15/12 21:23	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165768	10/13/12 09:35	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-E4-N,E,W WALLS (0-2ft bgs)

Lab Sample ID: 500-51234-7

Date Collected: 10/12/12 14:30

Matrix: Solid

Date Received: 10/12/12 16:20

Percent Solids: 95.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			165856	10/15/12 10:10	LAH	TAL CHI
Total/NA	Analysis	6010B		1	165976	10/15/12 21:30	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165768	10/13/12 09:35	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-E4-SOUTH WALL (0-2ft bgs)

Lab Sample ID: 500-51234-8

Date Collected: 10/12/12 14:40

Matrix: Solid

Date Received: 10/12/12 16:20

Percent Solids: 95.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			165856	10/15/12 10:10	LAH	TAL CHI
Total/NA	Analysis	6010B		1	165976	10/15/12 22:15	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165768	10/13/12 09:35	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-E4-FLOOR (2-2.5 ft bgs)

Lab Sample ID: 500-51234-9

Date Collected: 10/12/12 14:50

Matrix: Solid

Date Received: 10/12/12 16:20

Percent Solids: 95.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			165856	10/15/12 10:10	LAH	TAL CHI
Total/NA	Analysis	6010B		1	165976	10/15/12 22:21	TDS	TAL CHI
Total/NA	Analysis	6010B		50	166046	10/16/12 10:25	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165768	10/13/12 09:35	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
 Project/Site: East Chicago

TestAmerica Job ID: 500-51234-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAP	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAP	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAP	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAP	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAP	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAP	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13

Chicago  
2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

### Chain of Custody Record

**TestAmerica**  
THE LEADER IN ENVIRONM

TestAmerica Laborat

<b>Client Contact</b> Wanda Davis - URS Corp. ADQM Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300 Newark, DE 19713 (302) 781-5892 (302) 781-5901 Fax Project Name: IRM Sampling Site Location: DuPont East Chicago, Indiana PO#: LBIO-65636, Client Project#: 9267-7720100C-WHO650794	<b>Project Manager: Randy Palachek</b> Tel/Fax: 512.719.6006	<b>Site Contact: Keith Thompson</b> Lab Contact: Richard Wright	<b>Date: 10/12/12</b> Carrier: TA Courier	<b>COC No:</b> 1 of 1 COC
<b>Analysis Turnaround Time</b> Calendar (C) or Work Days (W) TAT if different from Below _____ <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input checked="" type="checkbox"/> 2 days <input type="checkbox"/> 1 day			Job No. <b>500-51234</b> SDG No.	

Filtered Sample  
As, Pb, Cd

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	Sample Specific
1 ECH-S-IRM1-HW-H1(0-2ft bgs)	10/12/12	1100	Composite	SOIL	1	N X	
2 ECH-S-IRM1-HW-H2(0-2ft bgs)	10/12/12	1115	Composite	SOIL	1	N X	
3 ECH-S-IRM1-HW-H3(0-2ft bgs)	10/12/12	1130	Composite	SOIL	1	N X	
4 ECH-S-IRM1-HW-H4(0-2ft bgs)	10/12/12	1140	Composite	SOIL	1	N X	
5 ECH-S-IRM1-HW-D4(0-2ft bgs)	10/12/12	1150	Composite	SOIL	1	N X	
6 ECH-S-IRM1-HW-D8(0-2ft bgs)	10/12/12	1200	Composite	SOIL	1	N X	
<del>7 ECH-S-IRM1-HW-E4-N,E,W WALLS(0-2ft bgs)</del>	<del>10/12/12</del>	<del>1430</del>	<del>Comp</del>	<del>Soil</del>	<del>1</del>	<del>N X</del>	
7 ECH-S-IRM1-HW-E4-N,E,W WALLS(0-2ft bgs)	10/12/12	1430	Comp	Soil	1	N X	
8 ECH-S-IRM1-HW-E4-SOUTH WALL(0-2ft bgs)	10/12/12	1440	Comp	Soil	1	N X	
9 ECH-S-IRM1-HW-E4-FLOOR(2ft bgs)	10/12/12	1450	Comp	Soil	1	N X	
						N	
						N	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other \_\_\_\_\_

Possible Hazard Identification  
 Non-Hazard     Flammable     Skin Irritant     Poison B     Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client     Disposal By Lab     Archive For \_\_\_\_\_ Month

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company: Parsons	Date/Time: 10/12/12 1500	Received by:	Company: TA	Date/Time: 10-12-12 7530
Relinquished by:	Company:	Date/Time: 10/12/12 1632	Received by:	Company: TA	Date/Time: 10/12/12 1620
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Chicago  
2417 Bond Street

Chain of Custody Record



University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

TestAmerica Laboratory

<b>Client Contact</b> Wanda Davis - URS Corp. ADQM Iron Hill Corporate Center, 4051 Oglatown Road, Suite 300 Newark, DE 19713 (302) 781-5892 (302) 781-8801 Fax Project Name: IRM Sampling Site Location: DuPont East Chicago, Indiana PO#: LBI0-65836, Client Projec#: 0267-7720100C-WHO650794	<b>Project Manager:</b> Randy Palachek Tel/Fax: 512.719.6006	<b>Site Contact:</b> Kelth Thompson <b>Lab Contact:</b> Richard Wright	<b>Date:</b> 10/12/12 <b>Carrier:</b> TA Courier	<b>COC No.:</b> 1 of 1 COC <b>Job No.:</b> 500-51234 <b>SDG No.:</b> Revision
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Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	Sample Specific
ECH-S-IRM1-HW-H1(0-2ft bgs)	10/12/12	1100	Composite	SOIL	1	N X	
ECH-S-IRM1-HW-H2(0-2ft bgs)	10/12/12	1115	Composite	SOIL	1	N X	
ECH-S-IRM1-HW-H3(0-2ft bgs)	10/12/12	1130	Composite	SOIL	1	N X	
ECH-S-IRM1-HW-H4(0-2ft bgs)	10/12/12	1140	Composite	SOIL	1	N X	
ECH-S-IRM1-HW-D4(0-2ft bgs)	10/12/12	1150	Composite	SOIL	1	N X	
ECH-S-IRM1-HW-DB(0-2ft bgs)	10/12/12	1200	Composite	SOIL	1	N X	
<del>ECH-S-IRM1-HW-NE WALLS(0-2ft bgs)</del>	<del>10/12/12</del>	<del>1130</del>	<del>Comp</del>	<del>Soil</del>	<del>1</del>	<del>N X</del>	
ECH-S-IRM1-HW-E4-NEW WALLS(0-2ft bgs)	10/12/12	1130	Comp	Soil	1	N X	
ECH-S-IRM1-HW-E4-SOUTH WALL(0-2ft bgs)	10/12/12	1130	Comp	Soil	1	N X	
ECH-S-IRM1-HW-E4-FLOOR(2.5ft bgs)	10/12/12	1450	Comp	Soil	1	N X	

Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4= HNO3, 5= NaOH, 6= Other

Possible Hazard Identification  
 Non-Hazard     Flammable     Skin Irritant     Poison B     Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client     Disposal By Lab     Archive For \_\_\_\_\_ Month

Special Instructions/QC Requirements & Comments:

Relinquished by: <i>[Signature]</i>	Company: <i>Parsons</i>	Date/Time: <i>10/12/12 1500</i>	Received by: <i>[Signature]</i>	Company: <i>TA</i>	Date/Time: <i>10/12/12 15:30</i>
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-51234-1

**Login Number: 51234**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Lunt, Jeff T**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	3.4
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-51282-1  
Client Project/Site: IRM Sampling

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
10/22/2012 3:34:16 PM  
Therese Hargraves  
Project Manager II  
[therese.hargraves@testamericainc.com](mailto:therese.hargraves@testamericainc.com)

Designee for  
Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

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**Job ID: 500-51282-1**

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**Laboratory: TestAmerica Chicago**

---

**Narrative**

**Job Narrative  
500-51282-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 10/15/2012 4:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.0° C.

**Metals**

Method(s) 6010B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for sample 500-51282-3 were outside control limits for As and Cd. The associated laboratory control sample (LCS) recovery met acceptance criteria.

Method(s) 6010B: The matrix duplicate %RPD for sample 500-51282-3 was outside the control limits for Zn.

No other analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

## Client Sample ID: ECH-S-IRM1-C1(0-2ft bgs)

Lab Sample ID: 500-51282-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	15		1.0	0.23	mg/Kg	1	*	6010B	Total/NA
Cadmium	4.7		0.21	0.051	mg/Kg	1	*	6010B	Total/NA
Lead	690		0.52	0.18	mg/Kg	1	*	6010B	Total/NA
Zinc	3000		21	7.1	mg/Kg	10	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-C1(0-2ft bgs)DUP

Lab Sample ID: 500-51282-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	6.6		1.1	0.24	mg/Kg	1	*	6010B	Total/NA
Cadmium	3.7		0.22	0.054	mg/Kg	1	*	6010B	Total/NA
Lead	500		0.54	0.19	mg/Kg	1	*	6010B	Total/NA
Zinc	1900		2.2	0.75	mg/Kg	1	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-C2(0-2ft bgs)

Lab Sample ID: 500-51282-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	19		1.1	0.24	mg/Kg	1	*	6010B	Total/NA
Cadmium	7.2		0.22	0.054	mg/Kg	1	*	6010B	Total/NA
Lead	370		0.54	0.19	mg/Kg	1	*	6010B	Total/NA
Zinc	1500		22	7.4	mg/Kg	10	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-C3(0-2ft bgs)

Lab Sample ID: 500-51282-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	380		1.2	0.26	mg/Kg	1	*	6010B	Total/NA
Cadmium	32		0.24	0.060	mg/Kg	1	*	6010B	Total/NA
Lead	4300		0.60	0.21	mg/Kg	1	*	6010B	Total/NA
Zinc	11000		24	8.3	mg/Kg	10	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-C4(0-2ft bgs)

Lab Sample ID: 500-51282-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	7.6		1.2	0.25	mg/Kg	1	*	6010B	Total/NA
Cadmium	25		0.23	0.057	mg/Kg	1	*	6010B	Total/NA
Lead	260		0.58	0.20	mg/Kg	1	*	6010B	Total/NA
Zinc	3000		23	7.9	mg/Kg	10	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-C5(0-2ft bgs)

Lab Sample ID: 500-51282-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	73		1.2	0.26	mg/Kg	1	*	6010B	Total/NA
Cadmium	75		0.23	0.058	mg/Kg	1	*	6010B	Total/NA
Lead	2400		0.59	0.20	mg/Kg	1	*	6010B	Total/NA
Zinc	11000		23	8.1	mg/Kg	10	*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-C6(0-2ft bgs)

Lab Sample ID: 500-51282-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	29		1.3	0.27	mg/Kg	1	*	6010B	Total/NA
Cadmium	13		0.25	0.062	mg/Kg	1	*	6010B	Total/NA
Lead	990		0.63	0.22	mg/Kg	1	*	6010B	Total/NA
Zinc	3700		25	8.6	mg/Kg	10	*	6010B	Total/NA

# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

## Client Sample ID: ECH-S-IRM1-C7(0-2ft bgs)

Lab Sample ID: 500-51282-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	14		1.1	0.25	mg/Kg	1	☼	6010B	Total/NA
Cadmium	12		0.23	0.057	mg/Kg	1	☼	6010B	Total/NA
Lead	520		0.57	0.20	mg/Kg	1	☼	6010B	Total/NA
Zinc	2900		23	7.9	mg/Kg	10	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-C8(0-2ft bgs)

Lab Sample ID: 500-51282-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	20		0.94	0.21	mg/Kg	1	☼	6010B	Total/NA
Cadmium	11		0.19	0.047	mg/Kg	1	☼	6010B	Total/NA
Lead	1500		0.47	0.16	mg/Kg	1	☼	6010B	Total/NA
Zinc	4600		19	6.5	mg/Kg	10	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-C9(0-2ft bgs)

Lab Sample ID: 500-51282-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.3		1.2	0.27	mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.66		0.24	0.060	mg/Kg	1	☼	6010B	Total/NA
Lead	35		0.61	0.21	mg/Kg	1	☼	6010B	Total/NA
Zinc	600		2.4	0.84	mg/Kg	1	☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

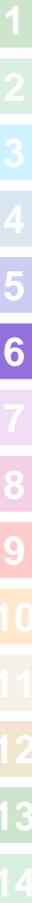
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# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-51282-1	ECH-S-IRM1-C1(0-2ft bgs)	Solid	10/15/12 08:00	10/15/12 16:00
500-51282-2	ECH-S-IRM1-C1(0-2ft bgs)DUP	Solid	10/15/12 08:00	10/15/12 16:00
500-51282-3	ECH-S-IRM1-C2(0-2ft bgs)	Solid	10/15/12 08:15	10/15/12 16:00
500-51282-4	ECH-S-IRM1-C3(0-2ft bgs)	Solid	10/15/12 08:30	10/15/12 16:00
500-51282-5	ECH-S-IRM1-C4(0-2ft bgs)	Solid	10/15/12 08:45	10/15/12 16:00
500-51282-6	ECH-S-IRM1-C5(0-2ft bgs)	Solid	10/15/12 09:00	10/15/12 16:00
500-51282-7	ECH-S-IRM1-C6(0-2ft bgs)	Solid	10/15/12 09:15	10/15/12 16:00
500-51282-8	ECH-S-IRM1-C7(0-2ft bgs)	Solid	10/15/12 09:30	10/15/12 16:00
500-51282-9	ECH-S-IRM1-C8(0-2ft bgs)	Solid	10/15/12 09:45	10/15/12 16:00
500-51282-10	ECH-S-IRM1-C9(0-2ft bgs)	Solid	10/15/12 10:00	10/15/12 16:00



# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

**Client Sample ID: ECH-S-IRM1-C1(0-2ft bgs)**

**Lab Sample ID: 500-51282-1**

Date Collected: 10/15/12 08:00

Matrix: Solid

Date Received: 10/15/12 16:00

Percent Solids: 90.7

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	15		1.0	0.23	mg/Kg	✱	10/18/12 10:15	10/19/12 22:26	1
Cadmium	4.7		0.21	0.051	mg/Kg	✱	10/18/12 10:15	10/19/12 22:26	1
Lead	690		0.52	0.18	mg/Kg	✱	10/18/12 10:15	10/19/12 22:26	1
Zinc	3000		21	7.1	mg/Kg	✱	10/18/12 10:15	10/20/12 13:45	10

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

**Client Sample ID: ECH-S-IRM1-C1(0-2ft bgs)DUP**

**Lab Sample ID: 500-51282-2**

Date Collected: 10/15/12 08:00

Matrix: Solid

Date Received: 10/15/12 16:00

Percent Solids: 91.4

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.6		1.1	0.24	mg/Kg	✱	10/18/12 10:15	10/19/12 22:30	1
Cadmium	3.7		0.22	0.054	mg/Kg	✱	10/18/12 10:15	10/19/12 22:30	1
Lead	500		0.54	0.19	mg/Kg	✱	10/18/12 10:15	10/19/12 22:30	1
Zinc	1900		2.2	0.75	mg/Kg	✱	10/18/12 10:15	10/19/12 22:30	1



# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

**Client Sample ID: ECH-S-IRM1-C2(0-2ft bgs)**

**Lab Sample ID: 500-51282-3**

Date Collected: 10/15/12 08:15

Matrix: Solid

Date Received: 10/15/12 16:00

Percent Solids: 83.4

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	19		1.1	0.24	mg/Kg	✱	10/18/12 10:15	10/19/12 22:34	1
Cadmium	7.2		0.22	0.054	mg/Kg	✱	10/18/12 10:15	10/19/12 22:34	1
Lead	370		0.54	0.19	mg/Kg	✱	10/18/12 10:15	10/19/12 22:34	1
Zinc	1500		22	7.4	mg/Kg	✱	10/18/12 10:15	10/20/12 13:49	10

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

**Client Sample ID: ECH-S-IRM1-C3(0-2ft bgs)**

**Lab Sample ID: 500-51282-4**

Date Collected: 10/15/12 08:30

Matrix: Solid

Date Received: 10/15/12 16:00

Percent Solids: 76.0

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	380		1.2	0.26	mg/Kg	✱	10/18/12 10:15	10/19/12 22:56	1
Cadmium	32		0.24	0.060	mg/Kg	✱	10/18/12 10:15	10/19/12 22:56	1
Lead	4300		0.60	0.21	mg/Kg	✱	10/18/12 10:15	10/19/12 22:56	1
Zinc	11000		24	8.3	mg/Kg	✱	10/18/12 10:15	10/20/12 14:09	10

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

**Client Sample ID: ECH-S-IRM1-C4(0-2ft bgs)**

**Lab Sample ID: 500-51282-5**

Date Collected: 10/15/12 08:45

Matrix: Solid

Date Received: 10/15/12 16:00

Percent Solids: 78.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	7.6		1.2	0.25	mg/Kg	✱	10/18/12 10:15	10/19/12 23:01	1
Cadmium	25		0.23	0.057	mg/Kg	✱	10/18/12 10:15	10/19/12 23:01	1
Lead	260		0.58	0.20	mg/Kg	✱	10/18/12 10:15	10/19/12 23:01	1
Zinc	3000		23	7.9	mg/Kg	✱	10/18/12 10:15	10/20/12 14:13	10

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

**Client Sample ID: ECH-S-IRM1-C5(0-2ft bgs)**

**Lab Sample ID: 500-51282-6**

Date Collected: 10/15/12 09:00

Matrix: Solid

Date Received: 10/15/12 16:00

Percent Solids: 84.7

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	73		1.2	0.26	mg/Kg	✱	10/18/12 10:15	10/19/12 23:05	1
Cadmium	75		0.23	0.058	mg/Kg	✱	10/18/12 10:15	10/19/12 23:05	1
Lead	2400		0.59	0.20	mg/Kg	✱	10/18/12 10:15	10/19/12 23:05	1
Zinc	11000		23	8.1	mg/Kg	✱	10/18/12 10:15	10/20/12 14:17	10



# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

**Client Sample ID: ECH-S-IRM1-C6(0-2ft bgs)**

**Lab Sample ID: 500-51282-7**

Date Collected: 10/15/12 09:15

Matrix: Solid

Date Received: 10/15/12 16:00

Percent Solids: 77.4

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	29		1.3	0.27	mg/Kg	✱	10/18/12 10:15	10/19/12 23:22	1
Cadmium	13		0.25	0.062	mg/Kg	✱	10/18/12 10:15	10/19/12 23:22	1
Lead	990		0.63	0.22	mg/Kg	✱	10/18/12 10:15	10/19/12 23:22	1
Zinc	3700		25	8.6	mg/Kg	✱	10/18/12 10:15	10/20/12 14:21	10

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

**Client Sample ID: ECH-S-IRM1-C7(0-2ft bgs)**

**Lab Sample ID: 500-51282-8**

**Date Collected: 10/15/12 09:30**

**Matrix: Solid**

**Date Received: 10/15/12 16:00**

**Percent Solids: 78.1**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	14		1.1	0.25	mg/Kg	✱	10/18/12 10:15	10/19/12 23:26	1
Cadmium	12		0.23	0.057	mg/Kg	✱	10/18/12 10:15	10/19/12 23:26	1
Lead	520		0.57	0.20	mg/Kg	✱	10/18/12 10:15	10/19/12 23:26	1
Zinc	2900		23	7.9	mg/Kg	✱	10/18/12 10:15	10/20/12 14:33	10

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

**Client Sample ID: ECH-S-IRM1-C8(0-2ft bgs)**

**Lab Sample ID: 500-51282-9**

Date Collected: 10/15/12 09:45

Matrix: Solid

Date Received: 10/15/12 16:00

Percent Solids: 88.3

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	20		0.94	0.21	mg/Kg	✱	10/18/12 10:15	10/19/12 23:30	1
Cadmium	11		0.19	0.047	mg/Kg	✱	10/18/12 10:15	10/19/12 23:30	1
Lead	1500		0.47	0.16	mg/Kg	✱	10/18/12 10:15	10/19/12 23:30	1
Zinc	4600		19	6.5	mg/Kg	✱	10/18/12 10:15	10/20/12 14:37	10

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

**Client Sample ID: ECH-S-IRM1-C9(0-2ft bgs)**

**Lab Sample ID: 500-51282-10**

Date Collected: 10/15/12 10:00

Matrix: Solid

Date Received: 10/15/12 16:00

Percent Solids: 74.1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.3		1.2	0.27	mg/Kg	✱	10/18/12 10:15	10/19/12 23:34	1
Cadmium	0.66		0.24	0.060	mg/Kg	✱	10/18/12 10:15	10/19/12 23:34	1
Lead	35		0.61	0.21	mg/Kg	✱	10/18/12 10:15	10/19/12 23:34	1
Zinc	600		2.4	0.84	mg/Kg	✱	10/18/12 10:15	10/19/12 23:34	1



# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
F	Duplicate RPD exceeds the control limit
F	MS or MSD exceeds the control limits
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

## Metals

### Prep Batch: 166370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51282-1	ECH-S-IRM1-C1(0-2ft bgs)	Total/NA	Solid	3050B	
500-51282-2	ECH-S-IRM1-C1(0-2ft bgs)DUP	Total/NA	Solid	3050B	
500-51282-3	ECH-S-IRM1-C2(0-2ft bgs)	Total/NA	Solid	3050B	
500-51282-3 DU	ECH-S-IRM1-C2(0-2ft bgs)	Total/NA	Solid	3050B	
500-51282-3 MS	ECH-S-IRM1-C2(0-2ft bgs)	Total/NA	Solid	3050B	
500-51282-3 MSD	ECH-S-IRM1-C2(0-2ft bgs)	Total/NA	Solid	3050B	
500-51282-4	ECH-S-IRM1-C3(0-2ft bgs)	Total/NA	Solid	3050B	
500-51282-5	ECH-S-IRM1-C4(0-2ft bgs)	Total/NA	Solid	3050B	
500-51282-6	ECH-S-IRM1-C5(0-2ft bgs)	Total/NA	Solid	3050B	
500-51282-7	ECH-S-IRM1-C6(0-2ft bgs)	Total/NA	Solid	3050B	
500-51282-8	ECH-S-IRM1-C7(0-2ft bgs)	Total/NA	Solid	3050B	
500-51282-9	ECH-S-IRM1-C8(0-2ft bgs)	Total/NA	Solid	3050B	
500-51282-10	ECH-S-IRM1-C9(0-2ft bgs)	Total/NA	Solid	3050B	
LCS 500-166370/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-166370/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 166644

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51282-1	ECH-S-IRM1-C1(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-2	ECH-S-IRM1-C1(0-2ft bgs)DUP	Total/NA	Solid	6010B	166370
500-51282-3	ECH-S-IRM1-C2(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-3 DU	ECH-S-IRM1-C2(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-3 MS	ECH-S-IRM1-C2(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-3 MSD	ECH-S-IRM1-C2(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-4	ECH-S-IRM1-C3(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-5	ECH-S-IRM1-C4(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-6	ECH-S-IRM1-C5(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-7	ECH-S-IRM1-C6(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-8	ECH-S-IRM1-C7(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-9	ECH-S-IRM1-C8(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-10	ECH-S-IRM1-C9(0-2ft bgs)	Total/NA	Solid	6010B	166370
LCS 500-166370/2-A	Lab Control Sample	Total/NA	Solid	6010B	166370
MB 500-166370/1-A	Method Blank	Total/NA	Solid	6010B	166370

### Analysis Batch: 166761

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51282-1	ECH-S-IRM1-C1(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-3	ECH-S-IRM1-C2(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-3 DU	ECH-S-IRM1-C2(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-3 MS	ECH-S-IRM1-C2(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-3 MSD	ECH-S-IRM1-C2(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-4	ECH-S-IRM1-C3(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-5	ECH-S-IRM1-C4(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-6	ECH-S-IRM1-C5(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-7	ECH-S-IRM1-C6(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-8	ECH-S-IRM1-C7(0-2ft bgs)	Total/NA	Solid	6010B	166370
500-51282-9	ECH-S-IRM1-C8(0-2ft bgs)	Total/NA	Solid	6010B	166370

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

## General Chemistry

### Analysis Batch: 165990

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51282-1	ECH-S-IRM1-C1(0-2ft bgs)	Total/NA	Solid	Moisture	
500-51282-2	ECH-S-IRM1-C1(0-2ft bgs)DUP	Total/NA	Solid	Moisture	
500-51282-3	ECH-S-IRM1-C2(0-2ft bgs)	Total/NA	Solid	Moisture	
500-51282-3 MS	ECH-S-IRM1-C2(0-2ft bgs)	Total/NA	Solid	Moisture	
500-51282-3 MSD	ECH-S-IRM1-C2(0-2ft bgs)	Total/NA	Solid	Moisture	
500-51282-4	ECH-S-IRM1-C3(0-2ft bgs)	Total/NA	Solid	Moisture	
500-51282-5	ECH-S-IRM1-C4(0-2ft bgs)	Total/NA	Solid	Moisture	
500-51282-6	ECH-S-IRM1-C5(0-2ft bgs)	Total/NA	Solid	Moisture	
500-51282-7	ECH-S-IRM1-C6(0-2ft bgs)	Total/NA	Solid	Moisture	
500-51282-8	ECH-S-IRM1-C7(0-2ft bgs)	Total/NA	Solid	Moisture	
500-51282-9	ECH-S-IRM1-C8(0-2ft bgs)	Total/NA	Solid	Moisture	
500-51282-10	ECH-S-IRM1-C9(0-2ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-166370/1-A**  
**Matrix: Solid**  
**Analysis Batch: 166644**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 166370**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		10/18/12 10:15	10/19/12 22:08	1
Cadmium	ND		0.20	0.050	mg/Kg		10/18/12 10:15	10/19/12 22:08	1
Lead	ND		0.50	0.17	mg/Kg		10/18/12 10:15	10/19/12 22:08	1
Zinc	ND		2.0	0.69	mg/Kg		10/18/12 10:15	10/19/12 22:08	1

**Lab Sample ID: LCS 500-166370/2-A**  
**Matrix: Solid**  
**Analysis Batch: 166644**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 166370**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.33		mg/Kg		93	80 - 120
Cadmium	5.00	4.66		mg/Kg		93	80 - 120
Lead	10.0	9.76		mg/Kg		98	80 - 120
Zinc	50.0	47.1		mg/Kg		94	80 - 120

**Lab Sample ID: 500-51282-3 MS**  
**Matrix: Solid**  
**Analysis Batch: 166644**

**Client Sample ID: ECH-S-IRM1-C2(0-2ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 166370**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	19		11.8	37.0	F	mg/Kg	☼	151	75 - 125
Cadmium	7.2		5.89	15.8	F	mg/Kg	☼	146	75 - 125
Lead	370		11.8	581	4	mg/Kg	☼	1812	75 - 125

**Lab Sample ID: 500-51282-3 MS**  
**Matrix: Solid**  
**Analysis Batch: 166761**

**Client Sample ID: ECH-S-IRM1-C2(0-2ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 166370**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	1500		58.9	2550	4	mg/Kg	☼	1841	75 - 125

**Lab Sample ID: 500-51282-3 MSD**  
**Matrix: Solid**  
**Analysis Batch: 166644**

**Client Sample ID: ECH-S-IRM1-C2(0-2ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 166370**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	19		11.8	45.4	F	mg/Kg	☼	221	75 - 125	20	20
Cadmium	7.2		5.91	17.2	F	mg/Kg	☼	170	75 - 125	9	20
Lead	370		11.8	522	4	mg/Kg	☼	1304	75 - 125	11	20

**Lab Sample ID: 500-51282-3 MSD**  
**Matrix: Solid**  
**Analysis Batch: 166761**

**Client Sample ID: ECH-S-IRM1-C2(0-2ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 166370**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Zinc	1500		59.1	2320	4	mg/Kg	☼	1444	75 - 125	10	20

# QC Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

## Method: 6010B - Metals (ICP) (Continued)

**Lab Sample ID: 500-51282-3 DU**

**Matrix: Solid**

**Analysis Batch: 166644**

**Client Sample ID: ECH-S-IRM1-C2(0-2ft bgs)**

**Prep Type: Total/NA**

**Prep Batch: 166370**

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Arsenic	19		22.0		mg/Kg	☼	14	20
Cadmium	7.2		7.48		mg/Kg	☼	4	20
Lead	370		347		mg/Kg	☼	6	20

**Lab Sample ID: 500-51282-3 DU**

**Matrix: Solid**

**Analysis Batch: 166761**

**Client Sample ID: ECH-S-IRM1-C2(0-2ft bgs)**

**Prep Type: Total/NA**

**Prep Batch: 166370**

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Zinc	1500		3710	F	mg/Kg	☼	87	20

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

## Client Sample ID: ECH-S-IRM1-C1(0-2ft bgs)

Lab Sample ID: 500-51282-1

Date Collected: 10/15/12 08:00

Matrix: Solid

Date Received: 10/15/12 16:00

Percent Solids: 90.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166370	10/18/12 10:15	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166644	10/19/12 22:26	TDS	TAL CHI
Total/NA	Analysis	6010B		10	166761	10/20/12 13:45	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165990	10/16/12 08:19	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-C1(0-2ft bgs)DUP

Lab Sample ID: 500-51282-2

Date Collected: 10/15/12 08:00

Matrix: Solid

Date Received: 10/15/12 16:00

Percent Solids: 91.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166370	10/18/12 10:15	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166644	10/19/12 22:30	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165990	10/16/12 08:19	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-C2(0-2ft bgs)

Lab Sample ID: 500-51282-3

Date Collected: 10/15/12 08:15

Matrix: Solid

Date Received: 10/15/12 16:00

Percent Solids: 83.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166370	10/18/12 10:15	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166644	10/19/12 22:34	TDS	TAL CHI
Total/NA	Analysis	6010B		10	166761	10/20/12 13:49	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165990	10/16/12 08:19	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-C3(0-2ft bgs)

Lab Sample ID: 500-51282-4

Date Collected: 10/15/12 08:30

Matrix: Solid

Date Received: 10/15/12 16:00

Percent Solids: 76.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166370	10/18/12 10:15	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166644	10/19/12 22:56	TDS	TAL CHI
Total/NA	Analysis	6010B		10	166761	10/20/12 14:09	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165990	10/16/12 08:19	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-C4(0-2ft bgs)

Lab Sample ID: 500-51282-5

Date Collected: 10/15/12 08:45

Matrix: Solid

Date Received: 10/15/12 16:00

Percent Solids: 78.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166370	10/18/12 10:15	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166644	10/19/12 23:01	TDS	TAL CHI
Total/NA	Analysis	6010B		10	166761	10/20/12 14:13	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165990	10/16/12 08:19	CMV	TAL CHI

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

## Client Sample ID: ECH-S-IRM1-C5(0-2ft bgs)

Lab Sample ID: 500-51282-6

Date Collected: 10/15/12 09:00

Matrix: Solid

Date Received: 10/15/12 16:00

Percent Solids: 84.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166370	10/18/12 10:15	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166644	10/19/12 23:05	TDS	TAL CHI
Total/NA	Analysis	6010B		10	166761	10/20/12 14:17	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165990	10/16/12 08:19	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-C6(0-2ft bgs)

Lab Sample ID: 500-51282-7

Date Collected: 10/15/12 09:15

Matrix: Solid

Date Received: 10/15/12 16:00

Percent Solids: 77.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166370	10/18/12 10:15	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166644	10/19/12 23:22	TDS	TAL CHI
Total/NA	Analysis	6010B		10	166761	10/20/12 14:21	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165990	10/16/12 08:19	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-C7(0-2ft bgs)

Lab Sample ID: 500-51282-8

Date Collected: 10/15/12 09:30

Matrix: Solid

Date Received: 10/15/12 16:00

Percent Solids: 78.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166370	10/18/12 10:15	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166644	10/19/12 23:26	TDS	TAL CHI
Total/NA	Analysis	6010B		10	166761	10/20/12 14:33	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165990	10/16/12 08:19	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-C8(0-2ft bgs)

Lab Sample ID: 500-51282-9

Date Collected: 10/15/12 09:45

Matrix: Solid

Date Received: 10/15/12 16:00

Percent Solids: 88.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166370	10/18/12 10:15	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166644	10/19/12 23:30	TDS	TAL CHI
Total/NA	Analysis	6010B		10	166761	10/20/12 14:37	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165990	10/16/12 08:19	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-C9(0-2ft bgs)

Lab Sample ID: 500-51282-10

Date Collected: 10/15/12 10:00

Matrix: Solid

Date Received: 10/15/12 16:00

Percent Solids: 74.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166370	10/18/12 10:15	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166644	10/19/12 23:34	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	165990	10/16/12 08:19	CMV	TAL CHI

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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# Certification Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51282-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-12
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13



Chicago  
2417 Bond Street

### Chain of Custody Record



University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

TestAmerica Laboratories

Client Contact Wanda Davis - URS Corp. ADQM Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300 Newark, DE 19713 (302) 781-5892 (302) 781-5901 Fax Project Name: IRM Sampling Site Location: DuPont East Chicago, Indiana PO#: <del>LBIO-65636</del> , Client Project#: 9267-7720100C-WHO6507754		Project Manager: Randy Palachek Tel/Fax: 512.719.6006		Site Contact: Keith Thompson Lab Contact: Richard Wright		Date: 10/15/12 Carrier: TA Courier		COC No: 600-51282 1 of 1 COCs Job No. SDG No. Sample Specific Note	
Analysis Turnaround Time Calendar (C) or Work Days (W) TAT If different from Below _____ <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day									

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	As, Cd, Pb, Zn														
1 ECH-S-IRM1-C1 (0-2ft bgs)	10/15/12	800	Composite	SOIL	1	N	X														
2 ECH-S-IRM1-C1 (0-2ft bgs) DUP	10/15/12	800	Comp	Soil	1	N	X														
3 ECH-S-IRM1-C2 (0-2ft bgs)	10/15/12	815	Comp	Soil	1	N	X														
3 ECH-S-IRM1-C2 (0-2ft bgs) MS/MSD	10/15/12	815	Comp	Soil	2	N	X														
4 ECH-S-IRM1-C3 (0-2ft bgs)	10/15/12	820	Comp	Soil	1	N	X														
5 ECH-S-IRM1-C4 (0-2ft bgs)	10/15/12	845	Comp	Soil	1	N	X														
6 ECH-S-IRM1-C5 (0-2ft bgs)	10/15/12	900	Comp	Soil	1	N	X														
7 ECH-S-IRM1-C6 (0-2ft bgs)	10/15/12	915	Comp	Soil	1	N	X														
8 ECH-S-IRM1-C7 (0-2ft bgs)	10/15/12	930	Comp	Soil	1	N	X														
9 ECH-S-IRM1-C8 (0-2ft bgs)	10/15/12	945	Comp	Soil	1	N	X														
10 ECH-S-IRM1-C9 (0-2ft bgs)	10/15/12	1000	Comp	Soil	1	N	X														

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other \_\_\_\_\_

Possible Hazard Identification  
 Non-Hazard     Flammable     Skin Irritant     Poison B     Unknown     \_\_\_\_\_

Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client     Disposal By Lab     Archive For \_\_\_\_\_ Months

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company: <u>URS</u>	Date/Time: 10/15/12 1500	Received by:	Company: <u>TestAmer</u>	Date/Time: 10/15/12 1500
Relinquished by:	Company: <u>TestAmer</u>	Date/Time: 10/15/12 1600	Received by:	Company: <u>TA-CHI</u>	Date/Time: 10/15/12 1600
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-51282-1

**Login Number: 51282**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Scott, Sherri L**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-51345-1  
Client Project/Site: IRM Sampling

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
10/18/2012 1:41:47 PM  
Therese Hargraves  
Project Manager II  
[therese.hargraves@testamericainc.com](mailto:therese.hargraves@testamericainc.com)

Designee for  
Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51345-1

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**Job ID: 500-51345-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-51345-1**

**Comments**

No additional comments.

**Receipt**

The sample was received on 10/16/2012 3:00 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.6° C.

**Metals**

No analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51345-1

**Client Sample ID: ECH-S-IRM1-DPOND(0-5ft bgs)**

**Lab Sample ID: 500-51345-1**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	130		1.4	0.31	mg/Kg	1	☼	6010B	Total/NA
Cadmium	10		0.28	0.070	mg/Kg	1	☼	6010B	Total/NA
Lead	98	B	0.70	0.24	mg/Kg	1	☼	6010B	Total/NA

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# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51345-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51345-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-51345-1	ECH-S-IRM1-DPOND(0-5ft bgs)	Solid	10/15/12 16:30	10/16/12 15:00

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51345-1

**Client Sample ID: ECH-S-IRM1-DPOND(0-5ft bgs)**

**Lab Sample ID: 500-51345-1**

**Date Collected: 10/15/12 16:30**

**Matrix: Solid**

**Date Received: 10/16/12 15:00**

**Percent Solids: 69.1**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	130		1.4	0.31	mg/Kg	✱	10/17/12 09:30	10/17/12 22:16	1
Cadmium	10		0.28	0.070	mg/Kg	✱	10/17/12 09:30	10/17/12 22:16	1
Lead	98	B	0.70	0.24	mg/Kg	✱	10/17/12 09:30	10/17/12 22:16	1

# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51345-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51345-1

## Metals

### Prep Batch: 166178

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51345-1	ECH-S-IRM1-DPOND(0-5ft bgs)	Total/NA	Solid	3050B	
LCS 500-166178/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-166178/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 166326

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51345-1	ECH-S-IRM1-DPOND(0-5ft bgs)	Total/NA	Solid	6010B	166178
LCS 500-166178/2-A	Lab Control Sample	Total/NA	Solid	6010B	166178
MB 500-166178/1-A	Method Blank	Total/NA	Solid	6010B	166178

## General Chemistry

### Analysis Batch: 166177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51345-1	ECH-S-IRM1-DPOND(0-5ft bgs)	Total/NA	Solid	Moisture	
500-51345-1 DU	ECH-S-IRM1-DPOND(0-5ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51345-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-166178/1-A**  
**Matrix: Solid**  
**Analysis Batch: 166326**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 166178**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		10/17/12 09:30	10/17/12 22:04	1
Cadmium	ND		0.20	0.050	mg/Kg		10/17/12 09:30	10/17/12 22:04	1
Lead	0.421	J	0.50	0.17	mg/Kg		10/17/12 09:30	10/17/12 22:04	1

**Lab Sample ID: LCS 500-166178/2-A**  
**Matrix: Solid**  
**Analysis Batch: 166326**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 166178**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	8.76		mg/Kg		88	80 - 120
Cadmium	5.00	4.58		mg/Kg		92	80 - 120
Lead	10.0	9.78		mg/Kg		98	80 - 120

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51345-1

**Client Sample ID: ECH-S-IRM1-DPOND(0-5ft bgs)**

**Lab Sample ID: 500-51345-1**

**Date Collected: 10/15/12 16:30**

**Matrix: Solid**

**Date Received: 10/16/12 15:00**

**Percent Solids: 69.1**

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Prep	3050B			166178	10/17/12 09:30	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166326	10/17/12 22:16	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	166177	10/17/12 08:39	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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# Certification Summary

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51345-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-12
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13





## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-51345-1

**Login Number: 51345**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Lunt, Jeff T**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	4.6
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-51464-1  
Client Project/Site: IRM Sampling  
Revision: 1

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
10/23/2012 5:04:07 PM  
Therese Hargraves  
Project Manager II  
[therese.hargraves@testamericainc.com](mailto:therese.hargraves@testamericainc.com)

Designee for  
Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

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## Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51464-1

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**Job ID: 500-51464-1**

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**Laboratory: TestAmerica Chicago**

### Narrative

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#### Job Narrative 500-51464-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 10/18/2012 4:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.5° C.

Except:

For sample 500-51464-2 chain's sample ID ends in (0-2ft bgs). Per client's email dated 10/23/12, change the sample ID to end in (2-2.5ft bgs). Scan revised chain and regenerate L2 report and edd. (L4 revision not required.)

#### Metals

No analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51464-1

**Client Sample ID: ECH-S-IRM1-HW-E1-N,E,W WALLS (0-2ft bgs)**

**Lab Sample ID: 500-51464-1**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	18		1.1	0.23	mg/Kg	1	*	*	6010B	Total/NA
Cadmium	5.2		0.21	0.053	mg/Kg	1	*	*	6010B	Total/NA
Lead	3700	B	0.53	0.18	mg/Kg	1	*	*	6010B	Total/NA

**Client Sample ID: ECH-S-IRM1-HW-E1-FLOOR (2-2.5ft bgs)**

**Lab Sample ID: 500-51464-2**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	9.6		0.99	0.22	mg/Kg	1	*	*	6010B	Total/NA
Cadmium	14		0.20	0.049	mg/Kg	1	*	*	6010B	Total/NA
Lead	4800	B	0.50	0.17	mg/Kg	1	*	*	6010B	Total/NA

**Client Sample ID: ECH-S-IRM1-HW-E1-SOUTH WALL (0-2ft bgs)**

**Lab Sample ID: 500-51464-3**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	39		0.92	0.20	mg/Kg	1	*	*	6010B	Total/NA
Cadmium	75		0.18	0.046	mg/Kg	1	*	*	6010B	Total/NA
Lead	58000		46	16	mg/Kg	100	*	*	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51464-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

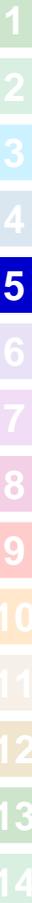
**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51464-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-51464-1	ECH-S-IRM1-HW-E1-N,E,W WALLS (0-2ft bgs)	Solid	10/18/12 13:30	10/18/12 16:10
500-51464-2	ECH-S-IRM1-HW-E1-FLOOR (2-2.5ft bgs)	Solid	10/18/12 13:40	10/18/12 16:10
500-51464-3	ECH-S-IRM1-HW-E1-SOUTH WALL (0-2ft bgs)	Solid	10/18/12 13:50	10/18/12 16:10

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51464-1

**Client Sample ID: ECH-S-IRM1-HW-E1-N,E,W WALLS (0-2ft bgs)**

**Lab Sample ID: 500-51464-1**

**Date Collected: 10/18/12 13:30**

**Matrix: Solid**

**Date Received: 10/18/12 16:10**

**Percent Solids: 91.0**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	18		1.1	0.23	mg/Kg	☼	10/19/12 09:15	10/20/12 13:30	1
Cadmium	5.2		0.21	0.053	mg/Kg	☼	10/19/12 09:15	10/20/12 13:30	1
Lead	3700	B	0.53	0.18	mg/Kg	☼	10/19/12 09:15	10/20/12 13:30	1



# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51464-1

**Client Sample ID: ECH-S-IRM1-HW-E1-FLOOR (2-2.5ft bgs)**

**Lab Sample ID: 500-51464-2**

**Date Collected: 10/18/12 13:40**

**Matrix: Solid**

**Date Received: 10/18/12 16:10**

**Percent Solids: 94.6**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	9.6		0.99	0.22	mg/Kg	✱	10/19/12 09:15	10/20/12 13:38	1
Cadmium	14		0.20	0.049	mg/Kg	✱	10/19/12 09:15	10/20/12 13:38	1
Lead	4800	B	0.50	0.17	mg/Kg	✱	10/19/12 09:15	10/20/12 13:38	1

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51464-1

**Client Sample ID: ECH-S-IRM1-HW-E1-SOUTH WALL (0-2ft  
bgs)**

**Lab Sample ID: 500-51464-3**

**Date Collected: 10/18/12 13:50**

**Matrix: Solid**

**Date Received: 10/18/12 16:10**

**Percent Solids: 90.8**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	39		0.92	0.20	mg/Kg	☼	10/19/12 09:15	10/20/12 13:44	1
Cadmium	75		0.18	0.046	mg/Kg	☼	10/19/12 09:15	10/20/12 13:44	1
Lead	58000		46	16	mg/Kg	☼	10/19/12 09:15	10/22/12 09:33	100



# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51464-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51464-1

## Metals

### Prep Batch: 166523

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51464-1	ECH-S-IRM1-HW-E1-N,E,W WALLS (0-2ft bgs)	Total/NA	Solid	3050B	
500-51464-2	ECH-S-IRM1-HW-E1-FLOOR (2-2.5ft bgs)	Total/NA	Solid	3050B	
500-51464-3	ECH-S-IRM1-HW-E1-SOUTH WALL (0-2ft bgs)	Total/NA	Solid	3050B	
LCS 500-166523/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-166523/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 166720

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51464-1	ECH-S-IRM1-HW-E1-N,E,W WALLS (0-2ft bgs)	Total/NA	Solid	6010B	166523
500-51464-2	ECH-S-IRM1-HW-E1-FLOOR (2-2.5ft bgs)	Total/NA	Solid	6010B	166523
500-51464-3	ECH-S-IRM1-HW-E1-SOUTH WALL (0-2ft bgs)	Total/NA	Solid	6010B	166523
LCS 500-166523/2-A	Lab Control Sample	Total/NA	Solid	6010B	166523
MB 500-166523/1-A	Method Blank	Total/NA	Solid	6010B	166523

### Analysis Batch: 166796

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51464-3	ECH-S-IRM1-HW-E1-SOUTH WALL (0-2ft bgs)	Total/NA	Solid	6010B	166523

## General Chemistry

### Analysis Batch: 166535

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51464-1	ECH-S-IRM1-HW-E1-N,E,W WALLS (0-2ft bgs)	Total/NA	Solid	Moisture	
500-51464-2	ECH-S-IRM1-HW-E1-FLOOR (2-2.5ft bgs)	Total/NA	Solid	Moisture	
500-51464-3	ECH-S-IRM1-HW-E1-SOUTH WALL (0-2ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51464-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-166523/1-A**  
**Matrix: Solid**  
**Analysis Batch: 166720**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 166523**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		10/19/12 09:15	10/20/12 13:17	1
Cadmium	ND		0.20	0.050	mg/Kg		10/19/12 09:15	10/20/12 13:17	1
Lead	0.287	J	0.50	0.17	mg/Kg		10/19/12 09:15	10/20/12 13:17	1

**Lab Sample ID: LCS 500-166523/2-A**  
**Matrix: Solid**  
**Analysis Batch: 166720**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 166523**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.06		mg/Kg		91	80 - 120
Cadmium	5.00	4.71		mg/Kg		94	80 - 120
Lead	10.0	9.93		mg/Kg		99	80 - 120

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51464-1

**Client Sample ID: ECH-S-IRM1-HW-E1-N,E,W WALLS (0-2ft bgs)**

**Lab Sample ID: 500-51464-1**

**Date Collected: 10/18/12 13:30**

**Matrix: Solid**

**Date Received: 10/18/12 16:10**

**Percent Solids: 91.0**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166523	10/19/12 09:15	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166720	10/20/12 13:30	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	166535	10/19/12 10:37	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-HW-E1-FLOOR (2-2.5ft bgs)**

**Lab Sample ID: 500-51464-2**

**Date Collected: 10/18/12 13:40**

**Matrix: Solid**

**Date Received: 10/18/12 16:10**

**Percent Solids: 94.6**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166523	10/19/12 09:15	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166720	10/20/12 13:38	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	166535	10/19/12 10:37	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-HW-E1-SOUTH WALL (0-2ft bgs)**

**Lab Sample ID: 500-51464-3**

**Date Collected: 10/18/12 13:50**

**Matrix: Solid**

**Date Received: 10/18/12 16:10**

**Percent Solids: 90.8**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			166523	10/19/12 09:15	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166720	10/20/12 13:44	PJ	TAL CHI
Total/NA	Analysis	6010B		100	166796	10/22/12 09:33	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	166535	10/19/12 10:37	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51464-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-12
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13



Chicago  
2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

### Chain of Custody Record

**TestAmer**  
THE LEADER IN ENVIRONMENT

TestAmerica Laboratories

Client Contact		Project Manager: Randy Palachek		Site Contact: Keith Thompson		Date: 10/18/12		COC No:	
Wanda Davis - URS Corp. ADQM		Tel/Fax: 512.719.6006		Lab Contact: Richard Wright		Carrier: TA Courier		___ of ___ COCs	
Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300		Analysis Turnaround Time						Job No.	
Newark, DE 19713		Calendar (C) or Work Days (W)						500-51464	
(302) 781-5892		TAT if different from Below						SDG No.	
(302) 781-5901 Fax		<input type="checkbox"/> 2 weeks							
Project Name: IRM Sampling		<input type="checkbox"/> 1 week							
Site Location: DuPont East Chicago, Indiana		<input checked="" type="checkbox"/> 2 days							
PO#: LBIO-66421, Client Project#: 9267-7720100C-WHQ6507754		<input type="checkbox"/> 1 day							

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	Total Metals (As, Cu, Pb)	Sample Specific Note
ECH-S-IRM1-HW-EI-N,E,W WALLS (0-2 ft bgs)	10/18/12	1330	Composite	SOIL	1	N	X	
ECH-S-IRM1-HW-EI-FLOOR (0-2 ft bgs)	10/18/12	1340	Composite	SOIL	1	N	X	18 1.005 TAT
ECH-S-IRM1-HW-EI-SOUTH WALL (0-2 ft bgs)	10/18/12	1350	Composite	SOIL	1	N	X	
						N		
						N		
						N		
						N		
						N		
						N		
						N		
						N		
						N		

Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4=HNO3, 5=NaOH, 6= Other

Possible Hazard Identification  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client  Disposal By Lab  Archive For \_\_\_ Months

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company: PERSONS	Date/Time: 10/18/12 1500	Received by:	Company: PERSONS	Date/Time: 10/18/12 1500
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-51464-1

**Login Number: 51464**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Lunt, Jeff T**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	3.5
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-51570-1  
Client Project/Site: IRM Sampling

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
10/29/2012 1:44:52 PM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

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**Job ID: 500-51570-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-51570-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 10/23/2012 7:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.2° C.

**Metals**

Method(s) 6010B: The matrix duplicate %RPD for sample 500-51570-3 was outside the control limits for As and Pb.

Method(s) 6010B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for sample 500-51570-3 were outside control limits for Cd. The associated laboratory control sample (LCS) recovery met acceptance criteria.

Method(s) 6010B: The matrix duplicate %RPD for sample 500-51570-3 was outside the control limits for Zn.

No other analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

## Client Sample ID: ECH-S-IRM1-D1 (0-2 ft bgs)

Lab Sample ID: 500-51570-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	64		1.0	0.23	mg/Kg	1	☼	6010B	Total/NA
Cadmium	20		0.21	0.052	mg/Kg	1	☼	6010B	Total/NA
Lead	3700		0.52	0.18	mg/Kg	1	☼	6010B	Total/NA
Zinc	4900		42	14	mg/Kg	20	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-D1 (0-2 ft bgs) DUP

Lab Sample ID: 500-51570-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	60		1.0	0.22	mg/Kg	1	☼	6010B	Total/NA
Cadmium	18		0.20	0.050	mg/Kg	1	☼	6010B	Total/NA
Lead	4100		0.51	0.17	mg/Kg	1	☼	6010B	Total/NA
Zinc	5900		40	14	mg/Kg	20	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-D2 (0-2 ft bgs)

Lab Sample ID: 500-51570-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	820		1.1	0.24	mg/Kg	1	☼	6010B	Total/NA
Cadmium	8.2		0.22	0.053	mg/Kg	1	☼	6010B	Total/NA
Lead	2000		0.54	0.19	mg/Kg	1	☼	6010B	Total/NA
Zinc	2300		43	15	mg/Kg	20	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-D3 (0-2 ft bgs)

Lab Sample ID: 500-51570-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	21		1.0	0.22	mg/Kg	1	☼	6010B	Total/NA
Cadmium	4.2		0.20	0.051	mg/Kg	1	☼	6010B	Total/NA
Lead	490		0.51	0.18	mg/Kg	1	☼	6010B	Total/NA
Zinc	1200		2.0	0.70	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-D4 (2-2.5 ft bgs)

Lab Sample ID: 500-51570-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	140		1.1	0.25	mg/Kg	1	☼	6010B	Total/NA
Cadmium	11		0.23	0.056	mg/Kg	1	☼	6010B	Total/NA
Lead	510		0.56	0.19	mg/Kg	1	☼	6010B	Total/NA
Zinc	1400		2.3	0.77	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-D5 (0-2 ft bgs)

Lab Sample ID: 500-51570-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	7.7		1.1	0.24	mg/Kg	1	☼	6010B	Total/NA
Cadmium	6.3		0.22	0.054	mg/Kg	1	☼	6010B	Total/NA
Lead	520		0.54	0.19	mg/Kg	1	☼	6010B	Total/NA
Zinc	3700		44	15	mg/Kg	20	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-D6 (0-2 ft bgs)

Lab Sample ID: 500-51570-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	39		1.1	0.24	mg/Kg	1	☼	6010B	Total/NA
Cadmium	7.9		0.22	0.054	mg/Kg	1	☼	6010B	Total/NA
Lead	600		0.55	0.19	mg/Kg	1	☼	6010B	Total/NA
Zinc	3000		44	15	mg/Kg	20	☼	6010B	Total/NA

# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

## Client Sample ID: ECH-S-IRM1-D7 (0-2 ft bgs)

Lab Sample ID: 500-51570-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	73		1.1	0.24	mg/Kg	1	☼	6010B	Total/NA
Cadmium	16		0.22	0.056	mg/Kg	1	☼	6010B	Total/NA
Lead	510		0.56	0.19	mg/Kg	1	☼	6010B	Total/NA
Zinc	2100		2.2	0.77	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-D8 (0-2 ft bgs)

Lab Sample ID: 500-51570-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	70		1.1	0.25	mg/Kg	1	☼	6010B	Total/NA
Cadmium	330		0.23	0.056	mg/Kg	1	☼	6010B	Total/NA
Lead	10000		0.57	0.20	mg/Kg	1	☼	6010B	Total/NA
Zinc	10000		45	16	mg/Kg	20	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-D9 (0-2 ft bgs)

Lab Sample ID: 500-51570-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	9.5		1.1	0.23	mg/Kg	1	☼	6010B	Total/NA
Cadmium	3.2		0.21	0.053	mg/Kg	1	☼	6010B	Total/NA
Lead	150		0.53	0.18	mg/Kg	1	☼	6010B	Total/NA
Zinc	260		2.1	0.73	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-D10 (0-2 ft bgs)

Lab Sample ID: 500-51570-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	25		1.0	0.22	mg/Kg	1	☼	6010B	Total/NA
Cadmium	72		0.21	0.051	mg/Kg	1	☼	6010B	Total/NA
Lead	1300		0.51	0.18	mg/Kg	1	☼	6010B	Total/NA
Zinc	1900		2.1	0.71	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-D11 (0-2 ft bgs)

Lab Sample ID: 500-51570-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	25		1.0	0.22	mg/Kg	1	☼	6010B	Total/NA
Cadmium	91		0.20	0.050	mg/Kg	1	☼	6010B	Total/NA
Lead	2400		0.51	0.17	mg/Kg	1	☼	6010B	Total/NA
Zinc	2600		41	14	mg/Kg	20	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-D12 (0-5 ft bgs)

Lab Sample ID: 500-51570-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	13		1.1	0.23	mg/Kg	1	☼	6010B	Total/NA
Cadmium	7.3		0.21	0.053	mg/Kg	1	☼	6010B	Total/NA
Lead	270		0.54	0.18	mg/Kg	1	☼	6010B	Total/NA
Zinc	290		2.1	0.74	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-D13 (0-2 ft bgs)

Lab Sample ID: 500-51570-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	18		1.0	0.22	mg/Kg	1	☼	6010B	Total/NA
Cadmium	8.0		0.20	0.050	mg/Kg	1	☼	6010B	Total/NA
Lead	160		0.50	0.17	mg/Kg	1	☼	6010B	Total/NA
Zinc	480		2.0	0.69	mg/Kg	1	☼	6010B	Total/NA

# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

## Client Sample ID: ECH-S-IRM1-D14 (0-5 ft bgs)

Lab Sample ID: 500-51570-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	6.4		1.0	0.23	mg/Kg	1	☼	6010B	Total/NA
Cadmium	3.5		0.21	0.052	mg/Kg	1	☼	6010B	Total/NA
Lead	94		0.52	0.18	mg/Kg	1	☼	6010B	Total/NA
Zinc	390		2.1	0.72	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-D15 (0-2 ft bgs)

Lab Sample ID: 500-51570-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	5.5		1.1	0.23	mg/Kg	1	☼	6010B	Total/NA
Cadmium	23		0.21	0.053	mg/Kg	1	☼	6010B	Total/NA
Lead	170		0.53	0.18	mg/Kg	1	☼	6010B	Total/NA
Zinc	500		2.1	0.73	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-D16 (0-2 ft bgs)

Lab Sample ID: 500-51570-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	5.3		1.0	0.22	mg/Kg	1	☼	6010B	Total/NA
Cadmium	6.2		0.20	0.051	mg/Kg	1	☼	6010B	Total/NA
Lead	160		0.51	0.18	mg/Kg	1	☼	6010B	Total/NA
Zinc	540		2.0	0.70	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-D17 (0-2 ft bgs)

Lab Sample ID: 500-51570-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.0		0.98	0.21	mg/Kg	1	☼	6010B	Total/NA
Cadmium	3.4		0.20	0.049	mg/Kg	1	☼	6010B	Total/NA
Lead	71		0.49	0.17	mg/Kg	1	☼	6010B	Total/NA
Zinc	430		2.0	0.67	mg/Kg	1	☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

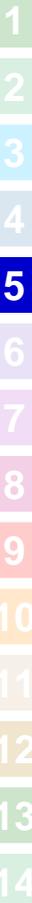
**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-51570-1	ECH-S-IRM1-D1 (0-2 ft bgs)	Solid	10/22/12 12:45	10/23/12 07:00
500-51570-2	ECH-S-IRM1-D1 (0-2 ft bgs) DUP	Solid	10/22/12 12:45	10/23/12 07:00
500-51570-3	ECH-S-IRM1-D2 (0-2 ft bgs)	Solid	10/22/12 13:00	10/23/12 07:00
500-51570-4	ECH-S-IRM1-D3 (0-2 ft bgs)	Solid	10/22/12 13:10	10/23/12 07:00
500-51570-5	ECH-S-IRM1-D4 (2-2.5 ft bgs)	Solid	10/22/12 13:15	10/23/12 07:00
500-51570-6	ECH-S-IRM1-D5 (0-2 ft bgs)	Solid	10/22/12 14:55	10/23/12 07:00
500-51570-7	ECH-S-IRM1-D6 (0-2 ft bgs)	Solid	10/22/12 13:20	10/23/12 07:00
500-51570-8	ECH-S-IRM1-D7 (0-2 ft bgs)	Solid	10/22/12 13:30	10/23/12 07:00
500-51570-9	ECH-S-IRM1-D8 (0-2 ft bgs)	Solid	10/22/12 13:40	10/23/12 07:00
500-51570-10	ECH-S-IRM1-D9 (0-2 ft bgs)	Solid	10/22/12 13:50	10/23/12 07:00
500-51570-11	ECH-S-IRM1-D10 (0-2 ft bgs)	Solid	10/22/12 14:00	10/23/12 07:00
500-51570-12	ECH-S-IRM1-D11 (0-2 ft bgs)	Solid	10/22/12 14:05	10/23/12 07:00
500-51570-13	ECH-S-IRM1-D12 (0-5 ft bgs)	Solid	10/22/12 14:10	10/23/12 07:00
500-51570-14	ECH-S-IRM1-D13 (0-2 ft bgs)	Solid	10/22/12 14:15	10/23/12 07:00
500-51570-15	ECH-S-IRM1-D14 (0-5 ft bgs)	Solid	10/22/12 14:20	10/23/12 07:00
500-51570-16	ECH-S-IRM1-D15 (0-2 ft bgs)	Solid	10/22/12 14:25	10/23/12 07:00
500-51570-17	ECH-S-IRM1-D16 (0-2 ft bgs)	Solid	10/22/12 14:30	10/23/12 07:00
500-51570-18	ECH-S-IRM1-D17 (0-2 ft bgs)	Solid	10/22/12 14:35	10/23/12 07:00

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

**Client Sample ID: ECH-S-IRM1-D1 (0-2 ft bgs)**

**Lab Sample ID: 500-51570-1**

Date Collected: 10/22/12 12:45

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 91.2

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	64		1.0	0.23	mg/Kg	✱	10/24/12 16:00	10/26/12 23:29	1
Cadmium	20		0.21	0.052	mg/Kg	✱	10/24/12 16:00	10/26/12 23:29	1
Lead	3700		0.52	0.18	mg/Kg	✱	10/24/12 16:00	10/26/12 23:29	1
Zinc	4900		42	14	mg/Kg	✱	10/24/12 16:00	10/27/12 13:15	20

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

**Client Sample ID: ECH-S-IRM1-D1 (0-2 ft bgs) DUP**

**Lab Sample ID: 500-51570-2**

Date Collected: 10/22/12 12:45

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 92.7

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	60		1.0	0.22	mg/Kg	✱	10/24/12 16:00	10/26/12 23:33	1
Cadmium	18		0.20	0.050	mg/Kg	✱	10/24/12 16:00	10/26/12 23:33	1
Lead	4100		0.51	0.17	mg/Kg	✱	10/24/12 16:00	10/26/12 23:33	1
Zinc	5900		40	14	mg/Kg	✱	10/24/12 16:00	10/27/12 13:19	20

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

**Client Sample ID: ECH-S-IRM1-D2 (0-2 ft bgs)**

**Lab Sample ID: 500-51570-3**

Date Collected: 10/22/12 13:00

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 87.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	820		1.1	0.24	mg/Kg	☆	10/24/12 16:00	10/26/12 23:37	1
Cadmium	8.2		0.22	0.053	mg/Kg	☆	10/24/12 16:00	10/26/12 23:37	1
Lead	2000		0.54	0.19	mg/Kg	☆	10/24/12 16:00	10/26/12 23:37	1
Zinc	2300		43	15	mg/Kg	☆	10/24/12 16:00	10/27/12 13:23	20

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

**Client Sample ID: ECH-S-IRM1-D3 (0-2 ft bgs)**

**Lab Sample ID: 500-51570-4**

Date Collected: 10/22/12 13:10

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 93.7

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	21		1.0	0.22	mg/Kg	✱	10/24/12 16:00	10/27/12 00:09	1
Cadmium	4.2		0.20	0.051	mg/Kg	✱	10/24/12 16:00	10/27/12 00:09	1
Lead	490		0.51	0.18	mg/Kg	✱	10/24/12 16:00	10/27/12 00:09	1
Zinc	1200		2.0	0.70	mg/Kg	✱	10/24/12 16:00	10/27/12 00:09	1

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

**Client Sample ID: ECH-S-IRM1-D4 (2-2.5 ft bgs)**

**Lab Sample ID: 500-51570-5**

Date Collected: 10/22/12 13:15

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 83.1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	140		1.1	0.25	mg/Kg	✱	10/24/12 16:00	10/27/12 00:13	1
Cadmium	11		0.23	0.056	mg/Kg	✱	10/24/12 16:00	10/27/12 00:13	1
Lead	510		0.56	0.19	mg/Kg	✱	10/24/12 16:00	10/27/12 00:13	1
Zinc	1400		2.3	0.77	mg/Kg	✱	10/24/12 16:00	10/27/12 00:13	1

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

**Client Sample ID: ECH-S-IRM1-D5 (0-2 ft bgs)**

**Lab Sample ID: 500-51570-6**

Date Collected: 10/22/12 14:55

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 90.8

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	7.7		1.1	0.24	mg/Kg	☆	10/24/12 16:00	10/27/12 00:17	1
Cadmium	6.3		0.22	0.054	mg/Kg	☆	10/24/12 16:00	10/27/12 00:17	1
Lead	520		0.54	0.19	mg/Kg	☆	10/24/12 16:00	10/27/12 00:17	1
Zinc	3700		44	15	mg/Kg	☆	10/24/12 16:00	10/27/12 13:43	20

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

**Client Sample ID: ECH-S-IRM1-D6 (0-2 ft bgs)**

**Lab Sample ID: 500-51570-7**

Date Collected: 10/22/12 13:20

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 89.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	39		1.1	0.24	mg/Kg	✱	10/24/12 16:00	10/27/12 00:21	1
Cadmium	7.9		0.22	0.054	mg/Kg	✱	10/24/12 16:00	10/27/12 00:21	1
Lead	600		0.55	0.19	mg/Kg	✱	10/24/12 16:00	10/27/12 00:21	1
Zinc	3000		44	15	mg/Kg	✱	10/24/12 16:00	10/27/12 13:56	20

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

**Client Sample ID: ECH-S-IRM1-D7 (0-2 ft bgs)**

**Lab Sample ID: 500-51570-8**

Date Collected: 10/22/12 13:30

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 85.7

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	73		1.1	0.24	mg/Kg	✱	10/24/12 16:00	10/27/12 00:25	1
Cadmium	16		0.22	0.056	mg/Kg	✱	10/24/12 16:00	10/27/12 00:25	1
Lead	510		0.56	0.19	mg/Kg	✱	10/24/12 16:00	10/27/12 00:25	1
Zinc	2100		2.2	0.77	mg/Kg	✱	10/24/12 16:00	10/27/12 00:25	1

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

**Client Sample ID: ECH-S-IRM1-D8 (0-2 ft bgs)**

**Lab Sample ID: 500-51570-9**

**Date Collected: 10/22/12 13:40**

**Matrix: Solid**

**Date Received: 10/23/12 07:00**

**Percent Solids: 87.1**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	70		1.1	0.25	mg/Kg	✱	10/24/12 16:00	10/27/12 00:29	1
Cadmium	330		0.23	0.056	mg/Kg	✱	10/24/12 16:00	10/27/12 00:29	1
Lead	10000		0.57	0.20	mg/Kg	✱	10/24/12 16:00	10/27/12 00:29	1
Zinc	10000		45	16	mg/Kg	✱	10/24/12 16:00	10/27/12 14:00	20

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

**Client Sample ID: ECH-S-IRM1-D9 (0-2 ft bgs)**

**Lab Sample ID: 500-51570-10**

Date Collected: 10/22/12 13:50

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 93.8

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	9.5		1.1	0.23	mg/Kg	✱	10/24/12 16:00	10/27/12 00:33	1
Cadmium	3.2		0.21	0.053	mg/Kg	✱	10/24/12 16:00	10/27/12 00:33	1
Lead	150		0.53	0.18	mg/Kg	✱	10/24/12 16:00	10/27/12 00:33	1
Zinc	260		2.1	0.73	mg/Kg	✱	10/24/12 16:00	10/27/12 00:33	1

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

**Client Sample ID: ECH-S-IRM1-D10 (0-2 ft bgs)**

**Lab Sample ID: 500-51570-11**

Date Collected: 10/22/12 14:00

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 87.0

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	25		1.0	0.22	mg/Kg	✱	10/24/12 16:00	10/27/12 00:49	1
Cadmium	72		0.21	0.051	mg/Kg	✱	10/24/12 16:00	10/27/12 00:49	1
Lead	1300		0.51	0.18	mg/Kg	✱	10/24/12 16:00	10/27/12 00:49	1
Zinc	1900		2.1	0.71	mg/Kg	✱	10/24/12 16:00	10/27/12 14:04	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

**Client Sample ID: ECH-S-IRM1-D11 (0-2 ft bgs)**

**Lab Sample ID: 500-51570-12**

Date Collected: 10/22/12 14:05

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 92.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	25		1.0	0.22	mg/Kg	✱	10/24/12 16:00	10/27/12 00:53	1
Cadmium	91		0.20	0.050	mg/Kg	✱	10/24/12 16:00	10/27/12 00:53	1
Lead	2400		0.51	0.17	mg/Kg	✱	10/24/12 16:00	10/27/12 00:53	1
Zinc	2600		41	14	mg/Kg	✱	10/24/12 16:00	10/27/12 14:08	20

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

**Client Sample ID: ECH-S-IRM1-D12 (0-5 ft bgs)**

**Lab Sample ID: 500-51570-13**

Date Collected: 10/22/12 14:10

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 88.7

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	13		1.1	0.23	mg/Kg	✱	10/24/12 16:00	10/27/12 00:56	1
Cadmium	7.3		0.21	0.053	mg/Kg	✱	10/24/12 16:00	10/27/12 00:56	1
Lead	270		0.54	0.18	mg/Kg	✱	10/24/12 16:00	10/27/12 00:56	1
Zinc	290		2.1	0.74	mg/Kg	✱	10/24/12 16:00	10/27/12 14:12	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

**Client Sample ID: ECH-S-IRM1-D13 (0-2 ft bgs)**

**Lab Sample ID: 500-51570-14**

Date Collected: 10/22/12 14:15

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 84.2

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	18		1.0	0.22	mg/Kg	☼	10/24/12 16:00	10/27/12 01:00	1
Cadmium	8.0		0.20	0.050	mg/Kg	☼	10/24/12 16:00	10/27/12 01:00	1
Lead	160		0.50	0.17	mg/Kg	☼	10/24/12 16:00	10/27/12 01:00	1
Zinc	480		2.0	0.69	mg/Kg	☼	10/24/12 16:00	10/27/12 14:16	1

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

**Client Sample ID: ECH-S-IRM1-D14 (0-5 ft bgs)**

**Lab Sample ID: 500-51570-15**

Date Collected: 10/22/12 14:20

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 91.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.4		1.0	0.23	mg/Kg	✱	10/24/12 16:00	10/27/12 01:04	1
Cadmium	3.5		0.21	0.052	mg/Kg	✱	10/24/12 16:00	10/27/12 01:04	1
Lead	94		0.52	0.18	mg/Kg	✱	10/24/12 16:00	10/27/12 01:04	1
Zinc	390		2.1	0.72	mg/Kg	✱	10/24/12 16:00	10/27/12 14:20	1

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

**Client Sample ID: ECH-S-IRM1-D15 (0-2 ft bgs)**

**Lab Sample ID: 500-51570-16**

Date Collected: 10/22/12 14:25

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 78.8

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.5		1.1	0.23	mg/Kg	✱	10/24/12 16:00	10/27/12 01:08	1
Cadmium	23		0.21	0.053	mg/Kg	✱	10/24/12 16:00	10/27/12 01:08	1
Lead	170		0.53	0.18	mg/Kg	✱	10/24/12 16:00	10/27/12 01:08	1
Zinc	500		2.1	0.73	mg/Kg	✱	10/24/12 16:00	10/27/12 14:24	1

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

**Client Sample ID: ECH-S-IRM1-D16 (0-2 ft bgs)**

**Lab Sample ID: 500-51570-17**

Date Collected: 10/22/12 14:30

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 93.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.3		1.0	0.22	mg/Kg	☆	10/24/12 16:00	10/27/12 01:12	1
Cadmium	6.2		0.20	0.051	mg/Kg	☆	10/24/12 16:00	10/27/12 01:12	1
Lead	160		0.51	0.18	mg/Kg	☆	10/24/12 16:00	10/27/12 01:12	1
Zinc	540		2.0	0.70	mg/Kg	☆	10/24/12 16:00	10/27/12 14:28	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

**Client Sample ID: ECH-S-IRM1-D17 (0-2 ft bgs)**

**Lab Sample ID: 500-51570-18**

Date Collected: 10/22/12 14:35

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 94.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.0		0.98	0.21	mg/Kg	☆	10/24/12 16:00	10/27/12 01:16	1
Cadmium	3.4		0.20	0.049	mg/Kg	☆	10/24/12 16:00	10/27/12 01:16	1
Lead	71		0.49	0.17	mg/Kg	☆	10/24/12 16:00	10/27/12 01:16	1
Zinc	430		2.0	0.67	mg/Kg	☆	10/24/12 16:00	10/27/12 14:32	1

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# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
F	Duplicate RPD exceeds the control limit
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
F	MS or MSD exceeds the control limits

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

## Metals

### Prep Batch: 167180

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51570-1	ECH-S-IRM1-D1 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51570-2	ECH-S-IRM1-D1 (0-2 ft bgs) DUP	Total/NA	Solid	3050B	
500-51570-3	ECH-S-IRM1-D2 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51570-3 DU	ECH-S-IRM1-D2 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51570-3 MS	ECH-S-IRM1-D2 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51570-3 MSD	ECH-S-IRM1-D2 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51570-4	ECH-S-IRM1-D3 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51570-5	ECH-S-IRM1-D4 (2-2.5 ft bgs)	Total/NA	Solid	3050B	
500-51570-6	ECH-S-IRM1-D5 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51570-7	ECH-S-IRM1-D6 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51570-8	ECH-S-IRM1-D7 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51570-9	ECH-S-IRM1-D8 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51570-10	ECH-S-IRM1-D9 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51570-11	ECH-S-IRM1-D10 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51570-12	ECH-S-IRM1-D11 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51570-13	ECH-S-IRM1-D12 (0-5 ft bgs)	Total/NA	Solid	3050B	
500-51570-14	ECH-S-IRM1-D13 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51570-15	ECH-S-IRM1-D14 (0-5 ft bgs)	Total/NA	Solid	3050B	
500-51570-16	ECH-S-IRM1-D15 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51570-17	ECH-S-IRM1-D16 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51570-18	ECH-S-IRM1-D17 (0-2 ft bgs)	Total/NA	Solid	3050B	
LCS 500-167180/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-167180/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 167539

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51570-1	ECH-S-IRM1-D1 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-2	ECH-S-IRM1-D1 (0-2 ft bgs) DUP	Total/NA	Solid	6010B	167180
500-51570-3	ECH-S-IRM1-D2 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-3 DU	ECH-S-IRM1-D2 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-3 MS	ECH-S-IRM1-D2 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-3 MSD	ECH-S-IRM1-D2 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-4	ECH-S-IRM1-D3 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-5	ECH-S-IRM1-D4 (2-2.5 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-6	ECH-S-IRM1-D5 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-7	ECH-S-IRM1-D6 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-8	ECH-S-IRM1-D7 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-9	ECH-S-IRM1-D8 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-10	ECH-S-IRM1-D9 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-11	ECH-S-IRM1-D10 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-12	ECH-S-IRM1-D11 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-13	ECH-S-IRM1-D12 (0-5 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-14	ECH-S-IRM1-D13 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-15	ECH-S-IRM1-D14 (0-5 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-16	ECH-S-IRM1-D15 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-17	ECH-S-IRM1-D16 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-18	ECH-S-IRM1-D17 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
LCS 500-167180/2-A	Lab Control Sample	Total/NA	Solid	6010B	167180
MB 500-167180/1-A	Method Blank	Total/NA	Solid	6010B	167180

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

## Metals (Continued)

### Analysis Batch: 167629

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51570-1	ECH-S-IRM1-D1 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-2	ECH-S-IRM1-D1 (0-2 ft bgs) DUP	Total/NA	Solid	6010B	167180
500-51570-3	ECH-S-IRM1-D2 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-3 DU	ECH-S-IRM1-D2 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-3 MS	ECH-S-IRM1-D2 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-3 MSD	ECH-S-IRM1-D2 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-6	ECH-S-IRM1-D5 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-7	ECH-S-IRM1-D6 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-9	ECH-S-IRM1-D8 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-11	ECH-S-IRM1-D10 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-12	ECH-S-IRM1-D11 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-13	ECH-S-IRM1-D12 (0-5 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-14	ECH-S-IRM1-D13 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-15	ECH-S-IRM1-D14 (0-5 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-16	ECH-S-IRM1-D15 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-17	ECH-S-IRM1-D16 (0-2 ft bgs)	Total/NA	Solid	6010B	167180
500-51570-18	ECH-S-IRM1-D17 (0-2 ft bgs)	Total/NA	Solid	6010B	167180

## General Chemistry

### Analysis Batch: 166988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51570-1	ECH-S-IRM1-D1 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51570-2	ECH-S-IRM1-D1 (0-2 ft bgs) DUP	Total/NA	Solid	Moisture	
500-51570-3	ECH-S-IRM1-D2 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51570-3 DU	ECH-S-IRM1-D2 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51570-3 MS	ECH-S-IRM1-D2 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51570-3 MSD	ECH-S-IRM1-D2 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51570-4	ECH-S-IRM1-D3 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51570-5	ECH-S-IRM1-D4 (2-2.5 ft bgs)	Total/NA	Solid	Moisture	
500-51570-6	ECH-S-IRM1-D5 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51570-7	ECH-S-IRM1-D6 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51570-8	ECH-S-IRM1-D7 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51570-9	ECH-S-IRM1-D8 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51570-10	ECH-S-IRM1-D9 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51570-11	ECH-S-IRM1-D10 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51570-12	ECH-S-IRM1-D11 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51570-13	ECH-S-IRM1-D12 (0-5 ft bgs)	Total/NA	Solid	Moisture	
500-51570-14	ECH-S-IRM1-D13 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51570-15	ECH-S-IRM1-D14 (0-5 ft bgs)	Total/NA	Solid	Moisture	
500-51570-16	ECH-S-IRM1-D15 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51570-17	ECH-S-IRM1-D16 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51570-18	ECH-S-IRM1-D17 (0-2 ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-167180/1-A**  
**Matrix: Solid**  
**Analysis Batch: 167539**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 167180**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		10/24/12 16:00	10/26/12 23:21	1
Cadmium	ND		0.20	0.050	mg/Kg		10/24/12 16:00	10/26/12 23:21	1
Lead	ND		0.50	0.17	mg/Kg		10/24/12 16:00	10/26/12 23:21	1
Zinc	ND		2.0	0.69	mg/Kg		10/24/12 16:00	10/26/12 23:21	1

**Lab Sample ID: LCS 500-167180/2-A**  
**Matrix: Solid**  
**Analysis Batch: 167539**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 167180**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	8.70		mg/Kg		87	80 - 120
Cadmium	5.00	4.33		mg/Kg		87	80 - 120
Lead	10.0	9.24		mg/Kg		92	80 - 120
Zinc	50.0	44.6		mg/Kg		89	80 - 120

**Lab Sample ID: 500-51570-3 MS**  
**Matrix: Solid**  
**Analysis Batch: 167539**

**Client Sample ID: ECH-S-IRM1-D2 (0-2 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 167180**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	820		11.2	701	4	mg/Kg	✱	-1053	75 - 125
Cadmium	8.2		5.62	11.1	F	mg/Kg	✱	53	75 - 125
Lead	2000		11.2	1170	4	mg/Kg	✱	-6975	75 - 125

**Lab Sample ID: 500-51570-3 MS**  
**Matrix: Solid**  
**Analysis Batch: 167629**

**Client Sample ID: ECH-S-IRM1-D2 (0-2 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 167180**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	2300		56.2	1750	4	mg/Kg	✱	-935	75 - 125

**Lab Sample ID: 500-51570-3 MSD**  
**Matrix: Solid**  
**Analysis Batch: 167539**

**Client Sample ID: ECH-S-IRM1-D2 (0-2 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 167180**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	820		9.72	803	4	mg/Kg	✱	-173	75 - 125	14	20
Cadmium	8.2		4.86	10.9	F	mg/Kg	✱	55	75 - 125	2	20
Lead	2000		9.72	984	4	mg/Kg	✱	-9969	75 - 125	17	20

**Lab Sample ID: 500-51570-3 MSD**  
**Matrix: Solid**  
**Analysis Batch: 167629**

**Client Sample ID: ECH-S-IRM1-D2 (0-2 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 167180**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Zinc	2300		48.6	1870	4	mg/Kg	✱	-836	75 - 125	7	20

# QC Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

## Method: 6010B - Metals (ICP) (Continued)

**Lab Sample ID: 500-51570-3 DU**  
**Matrix: Solid**  
**Analysis Batch: 167539**

**Client Sample ID: ECH-S-IRM1-D2 (0-2 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 167180**

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Arsenic	820		661	F	mg/Kg	☼	21	20
Cadmium	8.2		6.70		mg/Kg	☼	20	20
Lead	2000		983	F	mg/Kg	☼	66	20

**Lab Sample ID: 500-51570-3 DU**  
**Matrix: Solid**  
**Analysis Batch: 167629**

**Client Sample ID: ECH-S-IRM1-D2 (0-2 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 167180**

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Zinc	2300		1590	F	mg/Kg	☼	35	20

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

## Client Sample ID: ECH-S-IRM1-D1 (0-2 ft bgs)

Lab Sample ID: 500-51570-1

Date Collected: 10/22/12 12:45

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 91.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167180	10/24/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/26/12 23:29	TDS	TAL CHI
Total/NA	Analysis	6010B		20	167629	10/27/12 13:15	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	166988	10/23/12 14:59	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-D1 (0-2 ft bgs) DUP

Lab Sample ID: 500-51570-2

Date Collected: 10/22/12 12:45

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 92.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167180	10/24/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/26/12 23:33	TDS	TAL CHI
Total/NA	Analysis	6010B		20	167629	10/27/12 13:19	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	166988	10/23/12 14:59	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-D2 (0-2 ft bgs)

Lab Sample ID: 500-51570-3

Date Collected: 10/22/12 13:00

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 87.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167180	10/24/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/26/12 23:37	TDS	TAL CHI
Total/NA	Analysis	6010B		20	167629	10/27/12 13:23	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	166988	10/23/12 14:59	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-D3 (0-2 ft bgs)

Lab Sample ID: 500-51570-4

Date Collected: 10/22/12 13:10

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 93.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167180	10/24/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 00:09	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	166988	10/23/12 14:59	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-D4 (2-2.5 ft bgs)

Lab Sample ID: 500-51570-5

Date Collected: 10/22/12 13:15

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 83.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167180	10/24/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 00:13	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	166988	10/23/12 14:59	CMV	TAL CHI

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

## Client Sample ID: ECH-S-IRM1-D5 (0-2 ft bgs)

Lab Sample ID: 500-51570-6

Date Collected: 10/22/12 14:55

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 90.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167180	10/24/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 00:17	TDS	TAL CHI
Total/NA	Analysis	6010B		20	167629	10/27/12 13:43	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	166988	10/23/12 14:59	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-D6 (0-2 ft bgs)

Lab Sample ID: 500-51570-7

Date Collected: 10/22/12 13:20

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 89.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167180	10/24/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 00:21	TDS	TAL CHI
Total/NA	Analysis	6010B		20	167629	10/27/12 13:56	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	166988	10/23/12 14:59	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-D7 (0-2 ft bgs)

Lab Sample ID: 500-51570-8

Date Collected: 10/22/12 13:30

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 85.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167180	10/24/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 00:25	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	166988	10/23/12 14:59	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-D8 (0-2 ft bgs)

Lab Sample ID: 500-51570-9

Date Collected: 10/22/12 13:40

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 87.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167180	10/24/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 00:29	TDS	TAL CHI
Total/NA	Analysis	6010B		20	167629	10/27/12 14:00	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	166988	10/23/12 14:59	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-D9 (0-2 ft bgs)

Lab Sample ID: 500-51570-10

Date Collected: 10/22/12 13:50

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 93.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167180	10/24/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 00:33	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	166988	10/23/12 14:59	CMV	TAL CHI

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

## Client Sample ID: ECH-S-IRM1-D10 (0-2 ft bgs)

Lab Sample ID: 500-51570-11

Date Collected: 10/22/12 14:00

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 87.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167180	10/24/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 00:49	TDS	TAL CHI
Total/NA	Analysis	6010B		1	167629	10/27/12 14:04	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	166988	10/23/12 14:59	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-D11 (0-2 ft bgs)

Lab Sample ID: 500-51570-12

Date Collected: 10/22/12 14:05

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 92.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167180	10/24/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 00:53	TDS	TAL CHI
Total/NA	Analysis	6010B		20	167629	10/27/12 14:08	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	166988	10/23/12 14:59	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-D12 (0-5 ft bgs)

Lab Sample ID: 500-51570-13

Date Collected: 10/22/12 14:10

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 88.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167180	10/24/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 00:56	TDS	TAL CHI
Total/NA	Analysis	6010B		1	167629	10/27/12 14:12	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	166988	10/23/12 14:59	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-D13 (0-2 ft bgs)

Lab Sample ID: 500-51570-14

Date Collected: 10/22/12 14:15

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 84.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167180	10/24/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 01:00	TDS	TAL CHI
Total/NA	Analysis	6010B		1	167629	10/27/12 14:16	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	166988	10/23/12 14:59	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-D14 (0-5 ft bgs)

Lab Sample ID: 500-51570-15

Date Collected: 10/22/12 14:20

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 91.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167180	10/24/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 01:04	TDS	TAL CHI
Total/NA	Analysis	6010B		1	167629	10/27/12 14:20	TDS	TAL CHI

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

## Client Sample ID: ECH-S-IRM1-D14 (0-5 ft bgs)

Lab Sample ID: 500-51570-15

Date Collected: 10/22/12 14:20

Matrix: Solid

Date Received: 10/23/12 07:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	166988	10/23/12 14:59	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-D15 (0-2 ft bgs)

Lab Sample ID: 500-51570-16

Date Collected: 10/22/12 14:25

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 78.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167180	10/24/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 01:08	TDS	TAL CHI
Total/NA	Analysis	6010B		1	167629	10/27/12 14:24	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	166988	10/23/12 14:59	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-D16 (0-2 ft bgs)

Lab Sample ID: 500-51570-17

Date Collected: 10/22/12 14:30

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 93.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167180	10/24/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 01:12	TDS	TAL CHI
Total/NA	Analysis	6010B		1	167629	10/27/12 14:28	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	166988	10/23/12 14:59	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-D17 (0-2 ft bgs)

Lab Sample ID: 500-51570-18

Date Collected: 10/22/12 14:35

Matrix: Solid

Date Received: 10/23/12 07:00

Percent Solids: 94.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167180	10/24/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	167539	10/27/12 01:16	TDS	TAL CHI
Total/NA	Analysis	6010B		1	167629	10/27/12 14:32	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	166988	10/23/12 14:59	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51570-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-12
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13



Chicago  
2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

### Chain of Custody Record

**TestAmerica**  
THE LEADER IN ENVIRONMENTAL

TestAmerica Laboratories,

<b>Client Contact</b>		<b>Project Manager: Randy Palachek</b>		<b>Site Contact: Keith Thompson</b>		<b>Date: 10/22/12</b>		<b>COC No:</b>	
Wanda Davis - URS Corp. ADQM		Tel/Fax: 512.719.6006		Lab Contact: Richard Wright		Carrier: TA Courier		2 of 2 COCs	
Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300		<b>Analysis Turnaround Time</b>							
Newark, DE 19713		Calendar (C) or Work Days (W)							
(302) 781-5892		TAT if different from Below _____							
(302) 781-5901 Fax		<input checked="" type="checkbox"/> 2 weeks							
Project Name: IRM Sampling		<input type="checkbox"/> 1 week							
Site Location: DuPont East Chicago, Indiana		<input type="checkbox"/> 2 days							
PO#: LBIO-66421, Client Project#: 9267-7720100C-WHO6507754		<input type="checkbox"/> 1 day							

Job No.  
**500-51570**

SDG No.

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	Total Metals (As, Cd, Pb, Zn)	Sample Specific Note:
13 ECH-S-IRM1-D12 (0-5 ft bgs)	10/22/2012	1410	Composite	SOIL	1	N	X	
14 ECH-S-IRM1-D13 (0-2 ft bgs)	10/22/2012	1415	Composite	SOIL	1	N	X	
15 ECH-S-IRM1-D14 (0-5 ft bgs)	10/22/2012	1420	Composite	SOIL	3	N	X	
16 ECH-S-IRM-D15 (0-2 ft bgs)	10/22/2012	1425	Composite	SOIL	1	N	X	
17 ECH-S-IRM-D16 (0-2 ft bgs)	10/22/2012	1430	Composite	SOIL	1	N	X	
18 ECH-S-IRM-D17 (0-2 ft bgs)	10/22/2012	1435	Composite	SOIL	1	N	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other \_\_\_\_\_

Possible Hazard Identification  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company: <b>Parson</b>	Date/Time: <b>10/22/12 1515</b>	Received by:	Company: <b>TestAmerica</b>	Date/Time: <b>10/22/12 1515</b>
Relinquished by:	Company: <b>TestAmerica</b>	Date/Time: <b>10/22/12</b>	Received by:	Company: <b>TA</b>	Date/Time: <b>10/23/12 0700</b>
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

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Chicago  
2417 Bond Street

University Park, IL 60466  
phone: 708.534.5200 fax 708.534.5363

### Chain of Custody Record

TestAmerica  
THE LEADER IN ENVIRONMENTAL

TestAmerica Laboratories

Client Contact		Project Manager: Randy Palachek		Site Contact: Keith Thompson		Date: 10/22/12		COC No:	
Wanda Davis - URS Corp. ADQM		Tel/Fax: 512.719.6006		Lab Contact: Richard Wright		Carrier: TA Courier		1 of 2 COCs	
Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300		Analysis Turnaround Time							
Newark, DE 19713		Calendar (C) or Work Days (W)							
(302) 781-5892		TAT if different from Below:							
(302) 781-5904 Fax		<input checked="" type="checkbox"/> 2 weeks							
Project Name: IRM Sampling		<input type="checkbox"/> 1 week							
Site Location: DuPont East Chicago, Indiana		<input type="checkbox"/> 2 days							
PO#: LBIO-66421, Client Project#: 9267-7720100C-WHO6507754		<input type="checkbox"/> 1 day							
Sample Identification		Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	Total Metals (As, Cd, Pb, Zn)	Sample Specific Note
ECH-S-IRM1-D1 (0-2 ft bgs)		10/22/2012	1245	Composite	SOIL	1	N	X	
ECH-S-IRM1-D1 (0-2 ft bgs) DUP		10/22/2012	1245	Composite	SOIL	1	N	X	
<del>ECH-S-IRM1-D1 (0-2 ft bgs)</del>									
ECH-S-IRM1-D2 (0-2 ft bgs)		10/22/2012	1300	Composite	SOIL	3	N	X	extra volume for MS/MSD
ECH-S-IRM1-D3 (0-2 ft bgs)		10/22/2012	1310	Composite	SOIL	1	N	X	
ECH-S-IRM1-D4 (0-2 ft bgs)		10/22/2012	1315	Composite	SOIL	1	N	X	
ECH-S-IRM1-D5 (0-2 ft bgs)		10/22/2012	1455	Composite	SOIL	1	N	X	
ECH-S-IRM1-D6 (0-2 ft bgs)		10/22/2012	1320	Composite	SOIL	1	N	X	
ECH-S-IRM1-D7 (0-2 ft bgs)		10/22/2012	1330	Composite	SOIL	1	N	X	
ECH-S-IRM1-D8 (0-2 ft bgs)		10/22/2012	1340	Composite	SOIL	1	N	X	
ECH-S-IRM1-D9 (0-2 ft bgs)		10/22/2012	1350	Composite	SOIL	1	N	X	
ECH-S-IRM1-D10 (0-2 ft bgs)		10/22/2012	1400	Composite	SOIL	1	N	X	
ECH-S-IRM1-D11 (0-2 ft bgs)		10/22/2012	1405	Composite	SOIL	1	N	X	
Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4= HNO3, 5= NaOH, 6= Other									
Possible Hazard Identification					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)				
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown					<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months				
Special Instructions/QC Requirements & Comments:									
Relinquished by:		Company:	Date/Time:	Received by:		Company:	Date/Time:		
		Parsons	10/22/12 1515			TestAmerica	10/22/12 1515		
Relinquished by:		Company:	Date/Time:	Received by:		Company:	Date/Time:		
Relinquished by:		Company:	Date/Time:	Received by:		Company:	Date/Time:		

*KT*

**Chicago**

2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

**Chain of Custody Record**



TestAmerica Laboratories

<b>Client Contact</b> Wanda Davis - URS Corp. ADQM Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300 Newark, DE 19713 (302) 781-5892 (302) 781-5901 Fax Project Name: IRM Sampling Site Location: DuPont East Chicago, Indiana PO#: LBIO-66421, Client Project#: 9267-7720100C-WHO6507754	<b>Project Manager: Randy Palchek</b> Tel/Fax: 512.719.6086	<b>Site Contact: Keith Thompson</b> Lab Contact: Richard Wright	<b>Date: 10/22/12</b> Carrier: TA Courier	<b>COC No:</b> 2 of 2 COCs  <b>Job No:</b> 500-51570  <b>SDG No:</b>
<b>Analysis Turnaround Time</b> Calendar (C) or Work Days (W) TAT if different from below _____ <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day				

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	Total Metals (As, Cd, Pb, Zn)	Sample Specific Note
ECH-S-IRM1-D12 (0-5 ft bgs)	10/22/2012	1410	Composite	SOIL	1	N	X	
ECH-S-IRM1-D13 (0-2 ft bgs)	10/22/2012	1415	Composite	SOIL	1	N	X	
ECH-S-IRM1-D14 (0-5 ft bgs)	10/22/2012	1420	Composite	SOIL	3	N	X	
<del>ECH-S-IRM1-D15 (0-2 ft bgs)</del> ECH-S-IRM1-D15 (0-2 ft bgs)	10/22/2012	1425	Composite	SOIL	1	N	X	
<del>ECH-S-IRM1-D16 (0-2 ft bgs)</del> ECH-S-IRM1-D16 (0-2 ft bgs)	10/22/2012	1430	Composite	SOIL	1	N	X	
<del>ECH-S-IRM1-D17 (0-2 ft bgs)</del> ECH-S-IRM1-D17 (0-2 ft bgs)	10/22/2012	1435	Composite	SOIL	1	N	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other

Possible Hazard Identification  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months

Special Instructions/QC Requirements & Comments:

Relinquished by: <i>[Signature]</i>	Company: <i>Tarson</i>	Date/Time: <i>10/22/12 15:15</i>	Received by: <i>[Signature]</i>	Company: <i>TestAmerica</i>	Date/Time: <i>11/22/12 15:15</i>
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:



## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-51570-1

**Login Number: 51570**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Lunt, Jeff T**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	2.2
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-51730-1  
Client Project/Site: IRM Sampling

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
11/5/2012 4:25:16 PM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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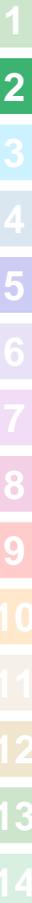
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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

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**Job ID: 500-51730-1**

---

**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-51730-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 10/25/2012 4:25 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.2° C.

**Metals**

Method(s) 6010B: The matrix duplicate %RPD for sample 500-51730-4 was outside the control limits for Cd and Pb.

Method(s) 6010B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for sample 500-51730-4 were outside control limits for Pb. The associated laboratory control sample (LCS) recovery met acceptance criteria.

Method(s) 6010B: The matrix spike / matrix spike duplicate (MS/MSD) precision for sample 500-51730-4 was outside control limits for Pb and Zn. The zinc spiking level was insignificant compared with the original sample concentration. The associated laboratory control sample (LCS) met acceptance criteria.

No other analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

## Client Sample ID: ECH-S-IRM1-F1 (0-2 ft bgs)

Lab Sample ID: 500-51730-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	5.0		0.97	0.21	mg/Kg	1	☼	6010B	Total/NA
Cadmium	5.5		0.19	0.048	mg/Kg	1	☼	6010B	Total/NA
Lead	240		0.48	0.17	mg/Kg	1	☼	6010B	Total/NA
Zinc	1100	B	1.9	0.66	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F2 (0-2 ft bgs)

Lab Sample ID: 500-51730-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	4.9		0.98	0.21	mg/Kg	1	☼	6010B	Total/NA
Cadmium	5.2		0.20	0.048	mg/Kg	1	☼	6010B	Total/NA
Lead	67		0.49	0.17	mg/Kg	1	☼	6010B	Total/NA
Zinc	1900	B	2.0	0.67	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F2 (0-2 ft bgs) DUP

Lab Sample ID: 500-51730-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.7		1.0	0.22	mg/Kg	1	☼	6010B	Total/NA
Cadmium	4.7		0.21	0.051	mg/Kg	1	☼	6010B	Total/NA
Lead	45		0.51	0.18	mg/Kg	1	☼	6010B	Total/NA
Zinc	1100	B	2.1	0.70	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F3 (0-2 ft bgs)

Lab Sample ID: 500-51730-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.9		1.0	0.22	mg/Kg	1	☼	6010B	Total/NA
Cadmium	1.1		0.20	0.050	mg/Kg	1	☼	6010B	Total/NA
Lead	20		0.50	0.17	mg/Kg	1	☼	6010B	Total/NA
Zinc	360	B	2.0	0.69	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F4 (0-2 ft bgs)

Lab Sample ID: 500-51730-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	26		1.1	0.23	mg/Kg	1	☼	6010B	Total/NA
Cadmium	9.7		0.21	0.053	mg/Kg	1	☼	6010B	Total/NA
Lead	1300		0.53	0.18	mg/Kg	1	☼	6010B	Total/NA
Zinc	1700	B	2.1	0.73	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F5 (2-2.5 ft bgs)

Lab Sample ID: 500-51730-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	59		1.1	0.25	mg/Kg	1	☼	6010B	Total/NA
Cadmium	30		0.23	0.057	mg/Kg	1	☼	6010B	Total/NA
Lead	1800		0.57	0.20	mg/Kg	1	☼	6010B	Total/NA
Zinc	3800	B	23	7.9	mg/Kg	10	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F6 (0-2 ft bgs)

Lab Sample ID: 500-51730-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	4.3		1.1	0.24	mg/Kg	1	☼	6010B	Total/NA
Cadmium	3.2		0.22	0.055	mg/Kg	1	☼	6010B	Total/NA
Lead	110		0.56	0.19	mg/Kg	1	☼	6010B	Total/NA
Zinc	610	B	2.2	0.77	mg/Kg	1	☼	6010B	Total/NA

# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

## Client Sample ID: ECH-S-IRM1-F7 (0-2 ft bgs)

Lab Sample ID: 500-51730-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	52		1.1	0.24	mg/Kg	1	☼	6010B	Total/NA
Cadmium	120		0.22	0.056	mg/Kg	1	☼	6010B	Total/NA
Lead	20000		11	3.9	mg/Kg	20	☼	6010B	Total/NA
Zinc	8600	B	45	15	mg/Kg	20	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F8 (2-2.5 ft bgs)

Lab Sample ID: 500-51730-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.6		1.1	0.25	mg/Kg	1	☼	6010B	Total/NA
Cadmium	2.0		0.23	0.056	mg/Kg	1	☼	6010B	Total/NA
Lead	40		0.57	0.20	mg/Kg	1	☼	6010B	Total/NA
Zinc	320	B	2.3	0.78	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F9 (0-2 ft bgs)

Lab Sample ID: 500-51730-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.8		1.1	0.23	mg/Kg	1	☼	6010B	Total/NA
Cadmium	3.4		0.21	0.052	mg/Kg	1	☼	6010B	Total/NA
Lead	170		0.53	0.18	mg/Kg	1	☼	6010B	Total/NA
Zinc	620	B	2.1	0.72	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F10 (0-2 ft bgs)

Lab Sample ID: 500-51730-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	65		1.0	0.22	mg/Kg	1	☼	6010B	Total/NA
Cadmium	44		0.20	0.050	mg/Kg	1	☼	6010B	Total/NA
Lead	3100		0.51	0.17	mg/Kg	1	☼	6010B	Total/NA
Zinc	3800	B	20	6.9	mg/Kg	10	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F11 (0-2 ft bgs)

Lab Sample ID: 500-51730-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	1.8		1.1	0.25	mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.98		0.23	0.056	mg/Kg	1	☼	6010B	Total/NA
Lead	18		0.57	0.20	mg/Kg	1	☼	6010B	Total/NA
Zinc	250	B	2.3	0.78	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F12 (0-2 ft bgs)

Lab Sample ID: 500-51730-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	120		1.1	0.24	mg/Kg	1	☼	6010B	Total/NA
Cadmium	54		0.22	0.054	mg/Kg	1	☼	6010B	Total/NA
Lead	3100		0.55	0.19	mg/Kg	1	☼	6010B	Total/NA
Zinc	7100	B	22	7.5	mg/Kg	10	☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

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Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

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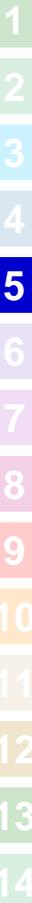
**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-51730-1	ECH-S-IRM1-F1 (0-2 ft bgs)	Solid	10/25/12 13:00	10/25/12 16:25
500-51730-2	ECH-S-IRM1-F2 (0-2 ft bgs)	Solid	10/25/12 13:10	10/25/12 16:25
500-51730-3	ECH-S-IRM1-F2 (0-2 ft bgs) DUP	Solid	10/25/12 13:10	10/25/12 16:25
500-51730-4	ECH-S-IRM1-F3 (0-2 ft bgs)	Solid	10/25/12 13:15	10/25/12 16:25
500-51730-5	ECH-S-IRM1-F4 (0-2 ft bgs)	Solid	10/25/12 13:20	10/25/12 16:25
500-51730-6	ECH-S-IRM1-F5 (2-2.5 ft bgs)	Solid	10/25/12 13:25	10/25/12 16:25
500-51730-7	ECH-S-IRM1-F6 (0-2 ft bgs)	Solid	10/25/12 13:30	10/25/12 16:25
500-51730-8	ECH-S-IRM1-F7 (0-2 ft bgs)	Solid	10/25/12 13:35	10/25/12 16:25
500-51730-9	ECH-S-IRM1-F8 (2-2.5 ft bgs)	Solid	10/25/12 13:40	10/25/12 16:25
500-51730-10	ECH-S-IRM1-F9 (0-2 ft bgs)	Solid	10/25/12 13:45	10/25/12 16:25
500-51730-11	ECH-S-IRM1-F10 (0-2 ft bgs)	Solid	10/25/12 13:50	10/25/12 16:25
500-51730-12	ECH-S-IRM1-F11 (0-2 ft bgs)	Solid	10/25/12 13:55	10/25/12 16:25
500-51730-13	ECH-S-IRM1-F12 (0-2 ft bgs)	Solid	10/25/12 14:00	10/25/12 16:25

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

**Client Sample ID: ECH-S-IRM1-F1 (0-2 ft bgs)**

**Lab Sample ID: 500-51730-1**

Date Collected: 10/25/12 13:00

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 89.3

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.0		0.97	0.21	mg/Kg	✱	10/26/12 16:00	10/31/12 17:32	1
Cadmium	5.5		0.19	0.048	mg/Kg	✱	10/26/12 16:00	10/31/12 17:32	1
Lead	240		0.48	0.17	mg/Kg	✱	10/26/12 16:00	10/31/12 17:32	1
Zinc	1100	B	1.9	0.66	mg/Kg	✱	10/26/12 16:00	10/31/12 17:32	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

**Client Sample ID: ECH-S-IRM1-F2 (0-2 ft bgs)**

**Lab Sample ID: 500-51730-2**

Date Collected: 10/25/12 13:10

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 94.1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.9		0.98	0.21	mg/Kg	✱	10/26/12 16:00	10/31/12 17:36	1
Cadmium	5.2		0.20	0.048	mg/Kg	✱	10/26/12 16:00	10/31/12 17:36	1
Lead	67		0.49	0.17	mg/Kg	✱	10/26/12 16:00	10/31/12 17:36	1
Zinc	1900	B	2.0	0.67	mg/Kg	✱	10/26/12 16:00	10/31/12 17:36	1



# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

**Client Sample ID: ECH-S-IRM1-F2 (0-2 ft bgs) DUP**

**Lab Sample ID: 500-51730-3**

Date Collected: 10/25/12 13:10

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 94.5

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.7		1.0	0.22	mg/Kg	✱	10/26/12 16:00	10/31/12 17:40	1
Cadmium	4.7		0.21	0.051	mg/Kg	✱	10/26/12 16:00	10/31/12 17:40	1
Lead	45		0.51	0.18	mg/Kg	✱	10/26/12 16:00	10/31/12 17:40	1
Zinc	1100	B	2.1	0.70	mg/Kg	✱	10/26/12 16:00	10/31/12 17:40	1

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

**Client Sample ID: ECH-S-IRM1-F3 (0-2 ft bgs)**

**Lab Sample ID: 500-51730-4**

Date Collected: 10/25/12 13:15

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 83.9

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.9		1.0	0.22	mg/Kg	✱	10/26/12 16:00	10/31/12 17:44	1
Cadmium	1.1		0.20	0.050	mg/Kg	✱	10/26/12 16:00	10/31/12 17:44	1
Lead	20		0.50	0.17	mg/Kg	✱	10/26/12 16:00	10/31/12 17:44	1
Zinc	360	B	2.0	0.69	mg/Kg	✱	10/26/12 16:00	10/31/12 17:44	1

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

**Client Sample ID: ECH-S-IRM1-F4 (0-2 ft bgs)**

**Lab Sample ID: 500-51730-5**

Date Collected: 10/25/12 13:20

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 91.5

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	26		1.1	0.23	mg/Kg	☼	10/26/12 16:00	10/31/12 18:04	1
Cadmium	9.7		0.21	0.053	mg/Kg	☼	10/26/12 16:00	10/31/12 18:04	1
Lead	1300		0.53	0.18	mg/Kg	☼	10/26/12 16:00	10/31/12 18:04	1
Zinc	1700	B	2.1	0.73	mg/Kg	☼	10/26/12 16:00	10/31/12 18:04	1

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

**Client Sample ID: ECH-S-IRM1-F5 (2-2.5 ft bgs)**

**Lab Sample ID: 500-51730-6**

Date Collected: 10/25/12 13:25

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 84.3

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	59		1.1	0.25	mg/Kg	✱	10/26/12 16:00	10/31/12 18:08	1
Cadmium	30		0.23	0.057	mg/Kg	✱	10/26/12 16:00	10/31/12 18:08	1
Lead	1800		0.57	0.20	mg/Kg	✱	10/26/12 16:00	10/31/12 18:08	1
Zinc	3800	B	23	7.9	mg/Kg	✱	10/26/12 16:00	11/01/12 13:29	10

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

**Client Sample ID: ECH-S-IRM1-F6 (0-2 ft bgs)**

**Lab Sample ID: 500-51730-7**

Date Collected: 10/25/12 13:30

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 81.4

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.3		1.1	0.24	mg/Kg	✱	10/26/12 16:00	10/31/12 18:22	1
Cadmium	3.2		0.22	0.055	mg/Kg	✱	10/26/12 16:00	10/31/12 18:22	1
Lead	110		0.56	0.19	mg/Kg	✱	10/26/12 16:00	10/31/12 18:22	1
Zinc	610	B	2.2	0.77	mg/Kg	✱	10/26/12 16:00	10/31/12 18:22	1

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

**Client Sample ID: ECH-S-IRM1-F7 (0-2 ft bgs)**

**Lab Sample ID: 500-51730-8**

**Date Collected: 10/25/12 13:35**

**Matrix: Solid**

**Date Received: 10/25/12 16:25**

**Percent Solids: 87.8**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	52		1.1	0.24	mg/Kg	✱	10/26/12 16:00	10/31/12 18:26	1
Cadmium	120		0.22	0.056	mg/Kg	✱	10/26/12 16:00	10/31/12 18:26	1
Lead	20000		11	3.9	mg/Kg	✱	10/26/12 16:00	11/01/12 13:33	20
Zinc	8600	B	45	15	mg/Kg	✱	10/26/12 16:00	11/01/12 13:33	20

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

**Client Sample ID: ECH-S-IRM1-F8 (2-2.5 ft bgs)**

**Lab Sample ID: 500-51730-9**

**Date Collected: 10/25/12 13:40**

**Matrix: Solid**

**Date Received: 10/25/12 16:25**

**Percent Solids: 80.3**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.6		1.1	0.25	mg/Kg	☼	10/26/12 16:00	10/31/12 18:31	1
Cadmium	2.0		0.23	0.056	mg/Kg	☼	10/26/12 16:00	10/31/12 18:31	1
Lead	40		0.57	0.20	mg/Kg	☼	10/26/12 16:00	10/31/12 18:31	1
Zinc	320	B	2.3	0.78	mg/Kg	☼	10/26/12 16:00	10/31/12 18:31	1



# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

**Client Sample ID: ECH-S-IRM1-F9 (0-2 ft bgs)**

**Lab Sample ID: 500-51730-10**

Date Collected: 10/25/12 13:45

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 85.9

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.8		1.1	0.23	mg/Kg	☆	10/26/12 16:00	10/31/12 18:34	1
Cadmium	3.4		0.21	0.052	mg/Kg	☆	10/26/12 16:00	10/31/12 18:34	1
Lead	170		0.53	0.18	mg/Kg	☆	10/26/12 16:00	10/31/12 18:34	1
Zinc	620	B	2.1	0.72	mg/Kg	☆	10/26/12 16:00	10/31/12 18:34	1

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

**Client Sample ID: ECH-S-IRM1-F10 (0-2 ft bgs)**

**Lab Sample ID: 500-51730-11**

Date Collected: 10/25/12 13:50

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 87.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	65		1.0	0.22	mg/Kg	✱	10/26/12 16:00	10/31/12 18:38	1
Cadmium	44		0.20	0.050	mg/Kg	✱	10/26/12 16:00	10/31/12 18:38	1
Lead	3100		0.51	0.17	mg/Kg	✱	10/26/12 16:00	10/31/12 18:38	1
Zinc	3800	B	20	6.9	mg/Kg	✱	10/26/12 16:00	11/01/12 13:37	10

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

**Client Sample ID: ECH-S-IRM1-F11 (0-2 ft bgs)**

**Lab Sample ID: 500-51730-12**

Date Collected: 10/25/12 13:55

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 84.3

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.8		1.1	0.25	mg/Kg	☼	10/26/12 16:00	10/31/12 18:43	1
Cadmium	0.98		0.23	0.056	mg/Kg	☼	10/26/12 16:00	10/31/12 18:43	1
Lead	18		0.57	0.20	mg/Kg	☼	10/26/12 16:00	10/31/12 18:43	1
Zinc	250	B	2.3	0.78	mg/Kg	☼	10/26/12 16:00	10/31/12 18:43	1

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

**Client Sample ID: ECH-S-IRM1-F12 (0-2 ft bgs)**

**Lab Sample ID: 500-51730-13**

Date Collected: 10/25/12 14:00

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 88.8

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	120		1.1	0.24	mg/Kg	✱	10/26/12 16:00	10/31/12 18:47	1
Cadmium	54		0.22	0.054	mg/Kg	✱	10/26/12 16:00	10/31/12 18:47	1
Lead	3100		0.55	0.19	mg/Kg	✱	10/26/12 16:00	10/31/12 18:47	1
Zinc	7100	B	22	7.5	mg/Kg	✱	10/26/12 16:00	11/01/12 13:41	10

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# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
F	Duplicate RPD exceeds the control limit
F	MS or MSD exceeds the control limits
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
F	RPD of the MS and MSD exceeds the control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
RER	Relative error ratio
DER	Duplicate error ratio (normalized absolute difference)
DLC	Decision level concentration
RL	Reporting Limit or Requested Limit (Radiochemistry only)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

## Metals

### Prep Batch: 167494

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51730-1	ECH-S-IRM1-F1 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51730-2	ECH-S-IRM1-F2 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51730-3	ECH-S-IRM1-F2 (0-2 ft bgs) DUP	Total/NA	Solid	3050B	
500-51730-4	ECH-S-IRM1-F3 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51730-4 DU	ECH-S-IRM1-F3 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51730-4 MS	ECH-S-IRM1-F3 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51730-4 MSD	ECH-S-IRM1-F3 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51730-5	ECH-S-IRM1-F4 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51730-6	ECH-S-IRM1-F5 (2-2.5 ft bgs)	Total/NA	Solid	3050B	
500-51730-7	ECH-S-IRM1-F6 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51730-8	ECH-S-IRM1-F7 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51730-9	ECH-S-IRM1-F8 (2-2.5 ft bgs)	Total/NA	Solid	3050B	
500-51730-10	ECH-S-IRM1-F9 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51730-11	ECH-S-IRM1-F10 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51730-12	ECH-S-IRM1-F11 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51730-13	ECH-S-IRM1-F12 (0-2 ft bgs)	Total/NA	Solid	3050B	
LCS 500-167494/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-167494/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 168106

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51730-1	ECH-S-IRM1-F1 (0-2 ft bgs)	Total/NA	Solid	6010B	167494
500-51730-2	ECH-S-IRM1-F2 (0-2 ft bgs)	Total/NA	Solid	6010B	167494
500-51730-3	ECH-S-IRM1-F2 (0-2 ft bgs) DUP	Total/NA	Solid	6010B	167494
500-51730-4	ECH-S-IRM1-F3 (0-2 ft bgs)	Total/NA	Solid	6010B	167494
500-51730-4 DU	ECH-S-IRM1-F3 (0-2 ft bgs)	Total/NA	Solid	6010B	167494
500-51730-4 MS	ECH-S-IRM1-F3 (0-2 ft bgs)	Total/NA	Solid	6010B	167494
500-51730-4 MSD	ECH-S-IRM1-F3 (0-2 ft bgs)	Total/NA	Solid	6010B	167494
500-51730-5	ECH-S-IRM1-F4 (0-2 ft bgs)	Total/NA	Solid	6010B	167494
500-51730-6	ECH-S-IRM1-F5 (2-2.5 ft bgs)	Total/NA	Solid	6010B	167494
500-51730-7	ECH-S-IRM1-F6 (0-2 ft bgs)	Total/NA	Solid	6010B	167494
500-51730-8	ECH-S-IRM1-F7 (0-2 ft bgs)	Total/NA	Solid	6010B	167494
500-51730-9	ECH-S-IRM1-F8 (2-2.5 ft bgs)	Total/NA	Solid	6010B	167494
500-51730-10	ECH-S-IRM1-F9 (0-2 ft bgs)	Total/NA	Solid	6010B	167494
500-51730-11	ECH-S-IRM1-F10 (0-2 ft bgs)	Total/NA	Solid	6010B	167494
500-51730-12	ECH-S-IRM1-F11 (0-2 ft bgs)	Total/NA	Solid	6010B	167494
500-51730-13	ECH-S-IRM1-F12 (0-2 ft bgs)	Total/NA	Solid	6010B	167494
LCS 500-167494/2-A	Lab Control Sample	Total/NA	Solid	6010B	167494
MB 500-167494/1-A	Method Blank	Total/NA	Solid	6010B	167494

### Analysis Batch: 168197

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51730-6	ECH-S-IRM1-F5 (2-2.5 ft bgs)	Total/NA	Solid	6010B	167494
500-51730-8	ECH-S-IRM1-F7 (0-2 ft bgs)	Total/NA	Solid	6010B	167494
500-51730-11	ECH-S-IRM1-F10 (0-2 ft bgs)	Total/NA	Solid	6010B	167494
500-51730-13	ECH-S-IRM1-F12 (0-2 ft bgs)	Total/NA	Solid	6010B	167494

## General Chemistry

### Analysis Batch: 167473

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51730-1	ECH-S-IRM1-F1 (0-2 ft bgs)	Total/NA	Solid	Moisture	

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

## General Chemistry (Continued)

### Analysis Batch: 167473 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51730-2	ECH-S-IRM1-F2 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51730-3	ECH-S-IRM1-F2 (0-2 ft bgs) DUP	Total/NA	Solid	Moisture	
500-51730-4	ECH-S-IRM1-F3 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51730-4 DU	ECH-S-IRM1-F3 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51730-4 MS	ECH-S-IRM1-F3 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51730-4 MSD	ECH-S-IRM1-F3 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51730-5	ECH-S-IRM1-F4 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51730-6	ECH-S-IRM1-F5 (2-2.5 ft bgs)	Total/NA	Solid	Moisture	
500-51730-7	ECH-S-IRM1-F6 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51730-8	ECH-S-IRM1-F7 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51730-9	ECH-S-IRM1-F8 (2-2.5 ft bgs)	Total/NA	Solid	Moisture	
500-51730-10	ECH-S-IRM1-F9 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51730-11	ECH-S-IRM1-F10 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51730-12	ECH-S-IRM1-F11 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51730-13	ECH-S-IRM1-F12 (0-2 ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-167494/1-A**  
**Matrix: Solid**  
**Analysis Batch: 168106**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 167494**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		10/26/12 16:00	10/31/12 17:16	1
Cadmium	ND		0.20	0.050	mg/Kg		10/26/12 16:00	10/31/12 17:16	1
Lead	ND		0.50	0.17	mg/Kg		10/26/12 16:00	10/31/12 17:16	1
Zinc	0.907	J	2.0	0.69	mg/Kg		10/26/12 16:00	10/31/12 17:16	1

**Lab Sample ID: LCS 500-167494/2-A**  
**Matrix: Solid**  
**Analysis Batch: 168106**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 167494**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.47		mg/Kg		95	80 - 120
Cadmium	5.00	4.74		mg/Kg		95	80 - 120
Lead	10.0	9.96		mg/Kg		100	80 - 120
Zinc	50.0	48.7		mg/Kg		97	80 - 120

**Lab Sample ID: 500-51730-4 MS**  
**Matrix: Solid**  
**Analysis Batch: 168106**

**Client Sample ID: ECH-S-IRM1-F3 (0-2 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 167494**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	2.9		10.3	11.6		mg/Kg	☼	84	75 - 125
Cadmium	1.1		5.17	5.23		mg/Kg	☼	80	75 - 125
Lead	20		10.3	22.4	F	mg/Kg	☼	24	75 - 125
Zinc	360	B	51.7	222	4	mg/Kg	☼	-258	75 - 125

**Lab Sample ID: 500-51730-4 MSD**  
**Matrix: Solid**  
**Analysis Batch: 168106**

**Client Sample ID: ECH-S-IRM1-F3 (0-2 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 167494**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	2.9		11.4	12.5		mg/Kg	☼	85	75 - 125	8	20
Cadmium	1.1		5.70	5.83		mg/Kg	☼	83	75 - 125	11	20
Lead	20		11.4	28.1	F	mg/Kg	☼	72	75 - 125	23	20
Zinc	360	B	57.0	274	4 F	mg/Kg	☼	-143	75 - 125	21	20

**Lab Sample ID: 500-51730-4 DU**  
**Matrix: Solid**  
**Analysis Batch: 168106**

**Client Sample ID: ECH-S-IRM1-F3 (0-2 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 167494**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	2.9		2.56		mg/Kg	☼	12	20
Cadmium	1.1		1.73	F	mg/Kg	☼	45	20
Lead	20		16.1	F	mg/Kg	☼	21	20
Zinc	360	B	358		mg/Kg	☼	0.8	20

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

## Client Sample ID: ECH-S-IRM1-F1 (0-2 ft bgs)

Lab Sample ID: 500-51730-1

Date Collected: 10/25/12 13:00

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 89.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167494	10/26/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	168106	10/31/12 17:32	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167473	10/26/12 14:09	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-F2 (0-2 ft bgs)

Lab Sample ID: 500-51730-2

Date Collected: 10/25/12 13:10

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 94.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167494	10/26/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	168106	10/31/12 17:36	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167473	10/26/12 14:09	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-F2 (0-2 ft bgs) DUP

Lab Sample ID: 500-51730-3

Date Collected: 10/25/12 13:10

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 94.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167494	10/26/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	168106	10/31/12 17:40	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167473	10/26/12 14:09	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-F3 (0-2 ft bgs)

Lab Sample ID: 500-51730-4

Date Collected: 10/25/12 13:15

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 83.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167494	10/26/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	168106	10/31/12 17:44	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167473	10/26/12 14:09	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-F4 (0-2 ft bgs)

Lab Sample ID: 500-51730-5

Date Collected: 10/25/12 13:20

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 91.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167494	10/26/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	168106	10/31/12 18:04	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167473	10/26/12 14:09	CMV	TAL CHI

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

## Client Sample ID: ECH-S-IRM1-F5 (2-2.5 ft bgs)

Lab Sample ID: 500-51730-6

Date Collected: 10/25/12 13:25

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 84.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167494	10/26/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	168106	10/31/12 18:08	TDS	TAL CHI
Total/NA	Analysis	6010B		10	168197	11/01/12 13:29	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167473	10/26/12 14:09	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-F6 (0-2 ft bgs)

Lab Sample ID: 500-51730-7

Date Collected: 10/25/12 13:30

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 81.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167494	10/26/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	168106	10/31/12 18:22	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167473	10/26/12 14:09	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-F7 (0-2 ft bgs)

Lab Sample ID: 500-51730-8

Date Collected: 10/25/12 13:35

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 87.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167494	10/26/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	168106	10/31/12 18:26	TDS	TAL CHI
Total/NA	Analysis	6010B		20	168197	11/01/12 13:33	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167473	10/26/12 14:09	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-F8 (2-2.5 ft bgs)

Lab Sample ID: 500-51730-9

Date Collected: 10/25/12 13:40

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 80.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167494	10/26/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	168106	10/31/12 18:31	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167473	10/26/12 14:09	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-F9 (0-2 ft bgs)

Lab Sample ID: 500-51730-10

Date Collected: 10/25/12 13:45

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 85.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167494	10/26/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	168106	10/31/12 18:34	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167473	10/26/12 14:09	CMV	TAL CHI

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

## Client Sample ID: ECH-S-IRM1-F10 (0-2 ft bgs)

Lab Sample ID: 500-51730-11

Date Collected: 10/25/12 13:50

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 87.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167494	10/26/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	168106	10/31/12 18:38	TDS	TAL CHI
Total/NA	Analysis	6010B		10	168197	11/01/12 13:37	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167473	10/26/12 14:09	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-F11 (0-2 ft bgs)

Lab Sample ID: 500-51730-12

Date Collected: 10/25/12 13:55

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 84.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167494	10/26/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	168106	10/31/12 18:43	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167473	10/26/12 14:09	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-F12 (0-2 ft bgs)

Lab Sample ID: 500-51730-13

Date Collected: 10/25/12 14:00

Matrix: Solid

Date Received: 10/25/12 16:25

Percent Solids: 88.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167494	10/26/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	168106	10/31/12 18:47	TDS	TAL CHI
Total/NA	Analysis	6010B		10	168197	11/01/12 13:41	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167473	10/26/12 14:09	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51730-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13

Chicago,  
2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

### Chain of Custody Record

**TestAmeri**  
THE LEADER IN ENVIRONMENTAL

TestAmerica Laboratories,

<b>Client Contact</b> Wanda Davis - URS Corp. ADQM Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300 Newark, DE 19713 (302) 781-5892 (302) 781-5901 Fax Project Name: IRM Sampling Site Location: DuPont East Chicago, Indiana PO#: LBIO-66421, Client Project#: 9287-7720100C-WHO6507754	<b>Project Manager: Randy Palachek</b> Tel/Fax: 512.719.6006	<b>Site Contact: Keith Thompson</b> Lab Contact: Richard Wright	<b>Date: 10/25/12</b> Carrier: TA Courier	<b>COC No:</b> 1 of 2 COCs  <b>Job No.</b> 500-51730  <b>SDG No.</b>
<b>Analysis Turnaround Time</b> Calendar (C) or Work Days (W) _____ TAT if different from Below _____ <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day				

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	Total Metals (As, Cd, Pb, Zn)	Sample Specific Note:
1 ECH-S-IRM1-F1 (0-2 ft bgs)	10/25/2012	1300	Composite	SOIL	1	N X		
2 ECH-S-IRM1-F2 (0-2 ft bgs)	10/25/2012	1310	Composite	SOIL	1	N X		
3 ECH-S-IRM1-F2 (0-2 ft bgs) DUP	10/25/2012	1310	Composite	SOIL	1	N X		
4 ECH-S-IRM1-F3 (0-2 ft bgs)	10/25/2012	1315	Composite	SOIL	3	N X		extra volume for MS/M
5 ECH-S-IRM1-F4 (0-2 ft bgs)	10/25/2012	1320	Composite	SOIL	1	N X		
6 ECH-S-IRM1-F5 (2-2.5 ft bgs)	10/25/2012	1325	Composite	SOIL	1	N X		
7 ECH-S-IRM1-F6 (0-2 ft bgs)	10/25/2012	1330	Composite	SOIL	1	N X		
8 ECH-S-IRM1-F7 (0-2 ft bgs)	10/25/2012	1335	Composite	SOIL	1	N X		
9 ECH-S-IRM1-F8 (2-2.5 ft bgs)	10/25/2012	1340	Composite	SOIL	1	N X		
10 ECH-S-IRM1-F9 (0-2 ft bgs)	10/25/2012	1345	Composite	SOIL	1	N X		
11 ECH-S-IRM1-F10 (0-2 ft bgs)	10/25/2012	1350	Composite	SOIL	1	N X		

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other \_\_\_\_\_

Possible Hazard Identification  
 Non-Hazard     Flammable     Skin Irritant     Poison B     Unknown

Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client     Disposal By Lab     Archive For \_\_\_\_\_ Months

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company: Pargens	Date/Time: 10/25/12 1500	Received by:	Company: TestAmeri	Date/Time: 10/25/12 1500
Relinquished by:	Company: TestAmeri	Date/Time: 10/25/12 1625	Received by:	Company: TA	Date/Time: 10/25/12 1625
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:



## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-51730-1

**Login Number: 51730**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Lunt, Jeff T**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	2.2
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-51780-1  
Client Project/Site: IRM Sampling

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
11/7/2012 2:54:34 PM  
Therese Hargraves  
Project Manager II  
[therese.hargraves@testamericainc.com](mailto:therese.hargraves@testamericainc.com)

Designee for  
Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

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**Job ID: 500-51780-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-51780-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 10/26/2012 2:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.5° C.

**Metals**

Method(s) 6010B: The matrix duplicate %RPD for sample 500-51780-3 was outside the control limits for Cd and Pb.

Method(s) 6010B: The matrix spike / matrix spike duplicate (MS/MSD) precision for sample 500-51780-3 was outside control limits for As and Cd. The associated laboratory control sample (LCS) met acceptance criteria.

Method(s) 6010B: The matrix duplicate %RPD for sample 500-51780-3 was outside the control limits for Zn.

No other analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

## Client Sample ID: ECH-S-IRM1-F13 (0-2 ft bgs)

Lab Sample ID: 500-51780-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	10		1.1	0.24	mg/Kg	1	☼	6010B	Total/NA
Cadmium	6.2		0.22	0.055	mg/Kg	1	☼	6010B	Total/NA
Lead	160		0.56	0.19	mg/Kg	1	☼	6010B	Total/NA
Zinc	970	B	2.2	0.76	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F13 (0-2 ft bgs) DUP

Lab Sample ID: 500-51780-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	17		1.3	0.28	mg/Kg	1	☼	6010B	Total/NA
Cadmium	8.2		0.25	0.062	mg/Kg	1	☼	6010B	Total/NA
Lead	240		0.63	0.22	mg/Kg	1	☼	6010B	Total/NA
Zinc	1300	B	2.5	0.87	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F14 (0-2 ft bgs)

Lab Sample ID: 500-51780-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	200		1.1	0.23	mg/Kg	1	☼	6010B	Total/NA
Cadmium	50		0.21	0.053	mg/Kg	1	☼	6010B	Total/NA
Lead	3000		0.54	0.18	mg/Kg	1	☼	6010B	Total/NA
Zinc	9500	B	43	15	mg/Kg	20	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F15 (0-2 ft bgs)

Lab Sample ID: 500-51780-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	200		1.5	0.32	mg/Kg	1	☼	6010B	Total/NA
Cadmium	69		0.29	0.073	mg/Kg	1	☼	6010B	Total/NA
Lead	4800		0.73	0.25	mg/Kg	1	☼	6010B	Total/NA
Zinc	19000	B	59	20	mg/Kg	20	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F16 (0-2 ft bgs)

Lab Sample ID: 500-51780-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	32		1.2	0.25	mg/Kg	1	☼	6010B	Total/NA
Cadmium	12		0.23	0.057	mg/Kg	1	☼	6010B	Total/NA
Lead	530		0.58	0.20	mg/Kg	1	☼	6010B	Total/NA
Zinc	1400	B	2.3	0.79	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F17 (0-2 ft bgs)

Lab Sample ID: 500-51780-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	39		1.3	0.29	mg/Kg	1	☼	6010B	Total/NA
Cadmium	16		0.27	0.066	mg/Kg	1	☼	6010B	Total/NA
Lead	3900		0.67	0.23	mg/Kg	1	☼	6010B	Total/NA
Zinc	6100	B	53	18	mg/Kg	20	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-E1 (0-2 ft bgs)

Lab Sample ID: 500-51780-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	9.5		1.1	0.23	mg/Kg	1	☼	6010B	Total/NA
Cadmium	3.5		0.21	0.053	mg/Kg	1	☼	6010B	Total/NA
Lead	390		0.53	0.18	mg/Kg	1	☼	6010B	Total/NA
Zinc	640	B	2.1	0.73	mg/Kg	1	☼	6010B	Total/NA

# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

## Client Sample ID: ECH-S-IRM1-E2 (0-2 ft bgs)

Lab Sample ID: 500-51780-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	13		1.1	0.23	mg/Kg	1	☼	6010B	Total/NA
Cadmium	4.3		0.22	0.053	mg/Kg	1	☼	6010B	Total/NA
Lead	290		0.54	0.19	mg/Kg	1	☼	6010B	Total/NA
Zinc	430	B	2.2	0.74	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-E3 (0-2 ft bgs)

Lab Sample ID: 500-51780-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	5.3		1.1	0.24	mg/Kg	1	☼	6010B	Total/NA
Cadmium	1.5		0.22	0.055	mg/Kg	1	☼	6010B	Total/NA
Lead	78		0.56	0.19	mg/Kg	1	☼	6010B	Total/NA
Zinc	150	B	2.2	0.77	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-E4 (0-2 ft bgs)

Lab Sample ID: 500-51780-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.0		1.1	0.24	mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.54		0.22	0.054	mg/Kg	1	☼	6010B	Total/NA
Lead	25		0.54	0.19	mg/Kg	1	☼	6010B	Total/NA
Zinc	75	B	2.2	0.75	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-E5 (0-2 ft bgs)

Lab Sample ID: 500-51780-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.3		1.1	0.24	mg/Kg	1	☼	6010B	Total/NA
Cadmium	2.3		0.22	0.054	mg/Kg	1	☼	6010B	Total/NA
Lead	46		0.54	0.19	mg/Kg	1	☼	6010B	Total/NA
Zinc	330	B	2.2	0.75	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-E6 (0-2 ft bgs)

Lab Sample ID: 500-51780-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.5		1.0	0.23	mg/Kg	1	☼	6010B	Total/NA
Cadmium	1.1		0.21	0.051	mg/Kg	1	☼	6010B	Total/NA
Lead	24		0.52	0.18	mg/Kg	1	☼	6010B	Total/NA
Zinc	170	B	2.1	0.71	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-E7 (0-2 ft bgs)

Lab Sample ID: 500-51780-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	1.9		1.0	0.22	mg/Kg	1	☼	6010B	Total/NA
Cadmium	5.1		0.20	0.050	mg/Kg	1	☼	6010B	Total/NA
Lead	17		0.50	0.17	mg/Kg	1	☼	6010B	Total/NA
Zinc	720	B	2.0	0.69	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-BFZ-43 (0-2)

Lab Sample ID: 500-51780-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	140		2.6	0.56	mg/Kg	1	☼	6010B	Total/NA
Cadmium	150		0.51	0.13	mg/Kg	1	☼	6010B	Total/NA
Lead	5500		1.3	0.44	mg/Kg	1	☼	6010B	Total/NA
Zinc	16000	B	100	35	mg/Kg	20	☼	6010B	Total/NA

# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

**Client Sample ID: ECH-EQBLK-1 (SPOON)**

**Lab Sample ID: 500-51780-15**

No Detections

**Client Sample ID: ECH-EQBLK-2 (AUGER)**

**Lab Sample ID: 500-51780-16**

No Detections

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# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

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Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

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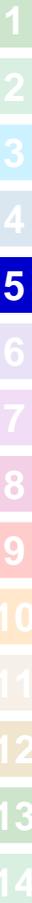
**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-51780-1	ECH-S-IRM1-F13 (0-2 ft bgs)	Solid	10/26/12 10:15	10/26/12 14:45
500-51780-2	ECH-S-IRM1-F13 (0-2 ft bgs) DUP	Solid	10/26/12 10:15	10/26/12 14:45
500-51780-3	ECH-S-IRM1-F14 (0-2 ft bgs)	Solid	10/26/12 10:20	10/26/12 14:45
500-51780-4	ECH-S-IRM1-F15 (0-2 ft bgs)	Solid	10/26/12 10:25	10/26/12 14:45
500-51780-5	ECH-S-IRM1-F16 (0-2 ft bgs)	Solid	10/26/12 10:30	10/26/12 14:45
500-51780-6	ECH-S-IRM1-F17 (0-2 ft bgs)	Solid	10/26/12 10:35	10/26/12 14:45
500-51780-7	ECH-S-IRM1-E1 (0-2 ft bgs)	Solid	10/26/12 10:40	10/26/12 14:45
500-51780-8	ECH-S-IRM1-E2 (0-2 ft bgs)	Solid	10/26/12 10:45	10/26/12 14:45
500-51780-9	ECH-S-IRM1-E3 (0-2 ft bgs)	Solid	10/26/12 10:50	10/26/12 14:45
500-51780-10	ECH-S-IRM1-E4 (0-2 ft bgs)	Solid	10/26/12 10:55	10/26/12 14:45
500-51780-11	ECH-S-IRM1-E5 (0-2 ft bgs)	Solid	10/26/12 11:00	10/26/12 14:45
500-51780-12	ECH-S-IRM1-E6 (0-2 ft bgs)	Solid	10/26/12 11:05	10/26/12 14:45
500-51780-13	ECH-S-IRM1-E7 (0-2 ft bgs)	Solid	10/26/12 11:10	10/26/12 14:45
500-51780-14	ECH-S-IRM1-BFZ-43 (0-2)	Solid	10/26/12 08:00	10/26/12 14:45
500-51780-15	ECH-EQBLK-1 (SPOON)	Water	10/26/12 13:05	10/26/12 14:45
500-51780-16	ECH-EQBLK-2 (AUGER)	Water	10/26/12 13:10	10/26/12 14:45

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

**Client Sample ID: ECH-S-IRM1-F13 (0-2 ft bgs)**

**Lab Sample ID: 500-51780-1**

Date Collected: 10/26/12 10:15

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 78.1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	10		1.1	0.24	mg/Kg	☼	10/29/12 16:30	11/02/12 23:09	1
Cadmium	6.2		0.22	0.055	mg/Kg	☼	10/29/12 16:30	11/02/12 23:09	1
Lead	160		0.56	0.19	mg/Kg	☼	10/29/12 16:30	11/02/12 23:09	1
Zinc	970	B	2.2	0.76	mg/Kg	☼	10/29/12 16:30	11/02/12 23:09	1

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

**Client Sample ID: ECH-S-IRM1-F13 (0-2 ft bgs) DUP**

**Lab Sample ID: 500-51780-2**

Date Collected: 10/26/12 10:15

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 76.3

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	17		1.3	0.28	mg/Kg	✱	10/29/12 16:30	11/02/12 23:12	1
Cadmium	8.2		0.25	0.062	mg/Kg	✱	10/29/12 16:30	11/02/12 23:12	1
Lead	240		0.63	0.22	mg/Kg	✱	10/29/12 16:30	11/02/12 23:12	1
Zinc	1300	B	2.5	0.87	mg/Kg	✱	10/29/12 16:30	11/02/12 23:12	1

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

**Client Sample ID: ECH-S-IRM1-F14 (0-2 ft bgs)**

**Lab Sample ID: 500-51780-3**

Date Collected: 10/26/12 10:20

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 84.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	200		1.1	0.23	mg/Kg	✱	10/29/12 16:30	11/02/12 23:28	1
Cadmium	50		0.21	0.053	mg/Kg	✱	10/29/12 16:30	11/02/12 23:28	1
Lead	3000		0.54	0.18	mg/Kg	✱	10/29/12 16:30	11/02/12 23:28	1
Zinc	9500	B	43	15	mg/Kg	✱	10/29/12 16:30	11/05/12 12:18	20

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

**Client Sample ID: ECH-S-IRM1-F15 (0-2 ft bgs)**

**Lab Sample ID: 500-51780-4**

Date Collected: 10/26/12 10:25

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 59.1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	200		1.5	0.32	mg/Kg	✱	10/29/12 16:30	11/02/12 23:52	1
Cadmium	69		0.29	0.073	mg/Kg	✱	10/29/12 16:30	11/02/12 23:52	1
Lead	4800		0.73	0.25	mg/Kg	✱	10/29/12 16:30	11/02/12 23:52	1
Zinc	19000	B	59	20	mg/Kg	✱	10/29/12 16:30	11/05/12 12:54	20

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

**Client Sample ID: ECH-S-IRM1-F16 (0-2 ft bgs)**

**Lab Sample ID: 500-51780-5**

Date Collected: 10/26/12 10:30

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 83.3

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	32		1.2	0.25	mg/Kg	✱	10/29/12 16:30	11/02/12 23:56	1
Cadmium	12		0.23	0.057	mg/Kg	✱	10/29/12 16:30	11/02/12 23:56	1
Lead	530		0.58	0.20	mg/Kg	✱	10/29/12 16:30	11/02/12 23:56	1
Zinc	1400	B	2.3	0.79	mg/Kg	✱	10/29/12 16:30	11/02/12 23:56	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

**Client Sample ID: ECH-S-IRM1-F17 (0-2 ft bgs)**

**Lab Sample ID: 500-51780-6**

Date Collected: 10/26/12 10:35

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 67.8

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	39		1.3	0.29	mg/Kg	✱	10/29/12 16:30	11/03/12 00:00	1
Cadmium	16		0.27	0.066	mg/Kg	✱	10/29/12 16:30	11/03/12 00:00	1
Lead	3900		0.67	0.23	mg/Kg	✱	10/29/12 16:30	11/03/12 00:00	1
Zinc	6100	B	53	18	mg/Kg	✱	10/29/12 16:30	11/05/12 13:07	20

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

**Client Sample ID: ECH-S-IRM1-E1 (0-2 ft bgs)**

**Lab Sample ID: 500-51780-7**

Date Collected: 10/26/12 10:40

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 89.4

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	9.5		1.1	0.23	mg/Kg	✱	10/29/12 16:30	11/03/12 00:05	1
Cadmium	3.5		0.21	0.053	mg/Kg	✱	10/29/12 16:30	11/03/12 00:05	1
Lead	390		0.53	0.18	mg/Kg	✱	10/29/12 16:30	11/03/12 00:05	1
Zinc	640	B	2.1	0.73	mg/Kg	✱	10/29/12 16:30	11/03/12 00:05	1

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

**Client Sample ID: ECH-S-IRM1-E2 (0-2 ft bgs)**

**Lab Sample ID: 500-51780-8**

Date Collected: 10/26/12 10:45

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 86.9

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	13		1.1	0.23	mg/Kg	✱	10/29/12 16:30	11/03/12 00:09	1
Cadmium	4.3		0.22	0.053	mg/Kg	✱	10/29/12 16:30	11/03/12 00:09	1
Lead	290		0.54	0.19	mg/Kg	✱	10/29/12 16:30	11/03/12 00:09	1
Zinc	430	B	2.2	0.74	mg/Kg	✱	10/29/12 16:30	11/03/12 00:09	1



# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

**Client Sample ID: ECH-S-IRM1-E3 (0-2 ft bgs)**

**Lab Sample ID: 500-51780-9**

Date Collected: 10/26/12 10:50

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 85.3

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.3		1.1	0.24	mg/Kg	✱	10/29/12 16:30	11/03/12 00:23	1
Cadmium	1.5		0.22	0.055	mg/Kg	✱	10/29/12 16:30	11/03/12 00:23	1
Lead	78		0.56	0.19	mg/Kg	✱	10/29/12 16:30	11/03/12 00:23	1
Zinc	150	B	2.2	0.77	mg/Kg	✱	10/29/12 16:30	11/03/12 00:23	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

**Client Sample ID: ECH-S-IRM1-E4 (0-2 ft bgs)**

**Lab Sample ID: 500-51780-10**

Date Collected: 10/26/12 10:55

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 86.5

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.0		1.1	0.24	mg/Kg	✱	10/29/12 16:30	11/03/12 00:27	1
Cadmium	0.54		0.22	0.054	mg/Kg	✱	10/29/12 16:30	11/03/12 00:27	1
Lead	25		0.54	0.19	mg/Kg	✱	10/29/12 16:30	11/03/12 00:27	1
Zinc	75	B	2.2	0.75	mg/Kg	✱	10/29/12 16:30	11/03/12 00:27	1



# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

**Client Sample ID: ECH-S-IRM1-E5 (0-2 ft bgs)**

**Lab Sample ID: 500-51780-11**

Date Collected: 10/26/12 11:00

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 85.9

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.3		1.1	0.24	mg/Kg	✱	10/29/12 16:30	11/03/12 00:31	1
Cadmium	2.3		0.22	0.054	mg/Kg	✱	10/29/12 16:30	11/03/12 00:31	1
Lead	46		0.54	0.19	mg/Kg	✱	10/29/12 16:30	11/03/12 00:31	1
Zinc	330	B	2.2	0.75	mg/Kg	✱	10/29/12 16:30	11/03/12 00:31	1

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

**Client Sample ID: ECH-S-IRM1-E6 (0-2 ft bgs)**

**Lab Sample ID: 500-51780-12**

Date Collected: 10/26/12 11:05

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 85.3

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.5		1.0	0.23	mg/Kg	✱	10/29/12 16:30	11/03/12 00:35	1
Cadmium	1.1		0.21	0.051	mg/Kg	✱	10/29/12 16:30	11/03/12 00:35	1
Lead	24		0.52	0.18	mg/Kg	✱	10/29/12 16:30	11/03/12 00:35	1
Zinc	170	B	2.1	0.71	mg/Kg	✱	10/29/12 16:30	11/03/12 00:35	1

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

**Client Sample ID: ECH-S-IRM1-E7 (0-2 ft bgs)**

**Lab Sample ID: 500-51780-13**

Date Collected: 10/26/12 11:10

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 91.1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.9		1.0	0.22	mg/Kg	✱	10/29/12 16:30	11/03/12 00:39	1
Cadmium	5.1		0.20	0.050	mg/Kg	✱	10/29/12 16:30	11/03/12 00:39	1
Lead	17		0.50	0.17	mg/Kg	✱	10/29/12 16:30	11/03/12 00:39	1
Zinc	720	B	2.0	0.69	mg/Kg	✱	10/29/12 16:30	11/03/12 00:39	1

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

**Client Sample ID: ECH-S-IRM1-BFZ-43 (0-2)**

**Lab Sample ID: 500-51780-14**

Date Collected: 10/26/12 08:00

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 36.8

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	140		2.6	0.56	mg/Kg	✱	10/29/12 16:30	11/03/12 00:43	1
Cadmium	150		0.51	0.13	mg/Kg	✱	10/29/12 16:30	11/03/12 00:43	1
Lead	5500		1.3	0.44	mg/Kg	✱	10/29/12 16:30	11/03/12 00:43	1
Zinc	16000	B	100	35	mg/Kg	✱	10/29/12 16:30	11/06/12 12:19	20

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

**Client Sample ID: ECH-EQBLK-1 (SPOON)**

**Lab Sample ID: 500-51780-15**

**Date Collected: 10/26/12 13:05**

**Matrix: Water**

**Date Received: 10/26/12 14:45**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.010	0.0024	mg/L		10/30/12 08:30	11/06/12 03:36	1
Cadmium	ND		0.0020	0.00054	mg/L		10/30/12 08:30	11/06/12 03:36	1
Lead	ND		0.0050	0.0016	mg/L		10/30/12 08:30	11/06/12 03:36	1
Zinc	ND		0.020	0.0047	mg/L		10/30/12 08:30	11/06/12 03:36	1

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

**Client Sample ID: ECH-EQBLK-2 (AUGER)**

**Lab Sample ID: 500-51780-16**

**Date Collected: 10/26/12 13:10**

**Matrix: Water**

**Date Received: 10/26/12 14:45**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.010	0.0024	mg/L		10/30/12 08:30	11/06/12 03:42	1
Cadmium	ND		0.0020	0.00054	mg/L		10/30/12 08:30	11/06/12 03:42	1
Lead	ND		0.0050	0.0016	mg/L		10/30/12 08:30	11/06/12 03:42	1
Zinc	ND		0.020	0.0047	mg/L		10/30/12 08:30	11/06/12 03:42	1

# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
F	Duplicate RPD exceeds the control limit
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
F	RPD of the MS and MSD exceeds the control limits

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
RER	Relative error ratio
DER	Duplicate error ratio (normalized absolute difference)
DLC	Decision level concentration
RL	Reporting Limit or Requested Limit (Radiochemistry only)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

## Metals

### Prep Batch: 167735

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51780-1	ECH-S-IRM1-F13 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51780-2	ECH-S-IRM1-F13 (0-2 ft bgs) DUP	Total/NA	Solid	3050B	
500-51780-3	ECH-S-IRM1-F14 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51780-3 DU	ECH-S-IRM1-F14 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51780-3 MS	ECH-S-IRM1-F14 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51780-3 MSD	ECH-S-IRM1-F14 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51780-4	ECH-S-IRM1-F15 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51780-5	ECH-S-IRM1-F16 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51780-6	ECH-S-IRM1-F17 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51780-7	ECH-S-IRM1-E1 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51780-8	ECH-S-IRM1-E2 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51780-9	ECH-S-IRM1-E3 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51780-10	ECH-S-IRM1-E4 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51780-11	ECH-S-IRM1-E5 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51780-12	ECH-S-IRM1-E6 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51780-13	ECH-S-IRM1-E7 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51780-14	ECH-S-IRM1-BFZ-43 (0-2)	Total/NA	Solid	3050B	

### Prep Batch: 167822

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51780-15	ECH-EQBLK-1 (SPOON)	Total/NA	Water	3010A	
500-51780-16	ECH-EQBLK-2 (AUGER)	Total/NA	Water	3010A	
LCS 500-167822/2-A	Lab Control Sample	Total/NA	Water	3010A	
MB 500-167822/1-A	Method Blank	Total/NA	Water	3010A	

### Analysis Batch: 168401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51780-1	ECH-S-IRM1-F13 (0-2 ft bgs)	Total/NA	Solid	6010B	167735
500-51780-2	ECH-S-IRM1-F13 (0-2 ft bgs) DUP	Total/NA	Solid	6010B	167735
500-51780-3	ECH-S-IRM1-F14 (0-2 ft bgs)	Total/NA	Solid	6010B	167735
500-51780-3 DU	ECH-S-IRM1-F14 (0-2 ft bgs)	Total/NA	Solid	6010B	167735
500-51780-3 MS	ECH-S-IRM1-F14 (0-2 ft bgs)	Total/NA	Solid	6010B	167735
500-51780-3 MSD	ECH-S-IRM1-F14 (0-2 ft bgs)	Total/NA	Solid	6010B	167735
500-51780-4	ECH-S-IRM1-F15 (0-2 ft bgs)	Total/NA	Solid	6010B	167735
500-51780-5	ECH-S-IRM1-F16 (0-2 ft bgs)	Total/NA	Solid	6010B	167735
500-51780-6	ECH-S-IRM1-F17 (0-2 ft bgs)	Total/NA	Solid	6010B	167735
500-51780-7	ECH-S-IRM1-E1 (0-2 ft bgs)	Total/NA	Solid	6010B	167735
500-51780-8	ECH-S-IRM1-E2 (0-2 ft bgs)	Total/NA	Solid	6010B	167735
500-51780-9	ECH-S-IRM1-E3 (0-2 ft bgs)	Total/NA	Solid	6010B	167735
500-51780-10	ECH-S-IRM1-E4 (0-2 ft bgs)	Total/NA	Solid	6010B	167735
500-51780-11	ECH-S-IRM1-E5 (0-2 ft bgs)	Total/NA	Solid	6010B	167735
500-51780-12	ECH-S-IRM1-E6 (0-2 ft bgs)	Total/NA	Solid	6010B	167735
500-51780-13	ECH-S-IRM1-E7 (0-2 ft bgs)	Total/NA	Solid	6010B	167735
500-51780-14	ECH-S-IRM1-BFZ-43 (0-2)	Total/NA	Solid	6010B	167735

### Analysis Batch: 168563

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51780-3	ECH-S-IRM1-F14 (0-2 ft bgs)	Total/NA	Solid	6010B	167735
500-51780-3 DU	ECH-S-IRM1-F14 (0-2 ft bgs)	Total/NA	Solid	6010B	167735
500-51780-3 MS	ECH-S-IRM1-F14 (0-2 ft bgs)	Total/NA	Solid	6010B	167735
500-51780-3 MSD	ECH-S-IRM1-F14 (0-2 ft bgs)	Total/NA	Solid	6010B	167735
500-51780-4	ECH-S-IRM1-F15 (0-2 ft bgs)	Total/NA	Solid	6010B	167735

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

## Metals (Continued)

### Analysis Batch: 168563 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51780-6	ECH-S-IRM1-F17 (0-2 ft bgs)	Total/NA	Solid	6010B	167735

### Analysis Batch: 168655

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51780-15	ECH-EQBLK-1 (SPOON)	Total/NA	Water	6010B	167822
500-51780-16	ECH-EQBLK-2 (AUGER)	Total/NA	Water	6010B	167822
LCS 500-167822/2-A	Lab Control Sample	Total/NA	Water	6010B	167822
MB 500-167822/1-A	Method Blank	Total/NA	Water	6010B	167822

### Analysis Batch: 168695

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51780-14	ECH-S-IRM1-BFZ-43 (0-2)	Total/NA	Solid	6010B	167735

## General Chemistry

### Analysis Batch: 167807

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51780-1	ECH-S-IRM1-F13 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51780-2	ECH-S-IRM1-F13 (0-2 ft bgs) DUP	Total/NA	Solid	Moisture	
500-51780-3	ECH-S-IRM1-F14 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51780-3 DU	ECH-S-IRM1-F14 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51780-3 MS	ECH-S-IRM1-F14 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51780-3 MSD	ECH-S-IRM1-F14 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51780-4	ECH-S-IRM1-F15 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51780-5	ECH-S-IRM1-F16 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51780-6	ECH-S-IRM1-F17 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51780-7	ECH-S-IRM1-E1 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51780-8	ECH-S-IRM1-E2 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51780-9	ECH-S-IRM1-E3 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51780-10	ECH-S-IRM1-E4 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51780-11	ECH-S-IRM1-E5 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51780-12	ECH-S-IRM1-E6 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51780-13	ECH-S-IRM1-E7 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51780-14	ECH-S-IRM1-BFZ-43 (0-2)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: 500-51780-3 MS**

**Matrix: Solid**

**Analysis Batch: 168401**

**Client Sample ID: ECH-S-IRM1-F14 (0-2 ft bgs)**

**Prep Type: Total/NA**

**Prep Batch: 167735**

Analyte	Sample	Sample	Spike	MS		Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier		Result	Qualifier					
Arsenic	200		11.7	182	4	mg/Kg	☼	-189	75 - 125	
Cadmium	50		5.85	39.6	4	mg/Kg	☼	-182	75 - 125	
Lead	3000		11.7	2930	4	mg/Kg	☼	-483	75 - 125	

**Lab Sample ID: 500-51780-3 MS**

**Matrix: Solid**

**Analysis Batch: 168563**

**Client Sample ID: ECH-S-IRM1-F14 (0-2 ft bgs)**

**Prep Type: Total/NA**

**Prep Batch: 167735**

Analyte	Sample	Sample	Spike	MS		Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier		Result	Qualifier					
Zinc	9500	B	58.5	8920	4	mg/Kg	☼	-1035	75 - 125	

**Lab Sample ID: 500-51780-3 MSD**

**Matrix: Solid**

**Analysis Batch: 168401**

**Client Sample ID: ECH-S-IRM1-F14 (0-2 ft bgs)**

**Prep Type: Total/NA**

**Prep Batch: 167735**

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier							
Arsenic	200		10.8	265	4 F	mg/Kg	☼	564	75 - 125	37	20	
Cadmium	50		5.41	56.5	4 F	mg/Kg	☼	117	75 - 125	35	20	
Lead	3000		10.8	3180	4	mg/Kg	☼	1786	75 - 125	8	20	

**Lab Sample ID: 500-51780-3 MSD**

**Matrix: Solid**

**Analysis Batch: 168563**

**Client Sample ID: ECH-S-IRM1-F14 (0-2 ft bgs)**

**Prep Type: Total/NA**

**Prep Batch: 167735**

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier							
Zinc	9500	B	54.1	10500	4	mg/Kg	☼	1862	75 - 125	17	20	

**Lab Sample ID: 500-51780-3 DU**

**Matrix: Solid**

**Analysis Batch: 168401**

**Client Sample ID: ECH-S-IRM1-F14 (0-2 ft bgs)**

**Prep Type: Total/NA**

**Prep Batch: 167735**

Analyte	Sample	Sample	Spike	DU		Unit	D	RPD	Limit
	Result	Qualifier		Result	Qualifier				
Arsenic	200			186		mg/Kg	☼	9	20
Cadmium	50			38.3	F	mg/Kg	☼	27	20
Lead	3000			2200	F	mg/Kg	☼	30	20

**Lab Sample ID: 500-51780-3 DU**

**Matrix: Solid**

**Analysis Batch: 168563**

**Client Sample ID: ECH-S-IRM1-F14 (0-2 ft bgs)**

**Prep Type: Total/NA**

**Prep Batch: 167735**

Analyte	Sample	Sample	Spike	DU		Unit	D	RPD	Limit
	Result	Qualifier		Result	Qualifier				
Zinc	9500	B		6600	F	mg/Kg	☼	36	20

**Lab Sample ID: MB 500-167822/1-A**

**Matrix: Water**

**Analysis Batch: 168655**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 167822**

Analyte	MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		0.010	0.0024	mg/L		10/30/12 08:30	11/06/12 02:52	1
Cadmium	ND		0.0020	0.00054	mg/L		10/30/12 08:30	11/06/12 02:52	1
Lead	ND		0.0050	0.0016	mg/L		10/30/12 08:30	11/06/12 02:52	1

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

## Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: MB 500-167822/1-A

Matrix: Water

Analysis Batch: 168655

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 167822

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		0.020	0.0047	mg/L		10/30/12 08:30	11/06/12 02:52	1

Lab Sample ID: LCS 500-167822/2-A

Matrix: Water

Analysis Batch: 168655

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 167822

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.100	0.0886		mg/L		89	80 - 120
Cadmium	0.0500	0.0459		mg/L		92	80 - 120
Lead	0.100	0.0954		mg/L		95	80 - 120
Zinc	0.500	0.464		mg/L		93	80 - 120

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

**Client Sample ID: ECH-S-IRM1-F13 (0-2 ft bgs)**

**Lab Sample ID: 500-51780-1**

Date Collected: 10/26/12 10:15

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 78.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167735	10/29/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168401	11/02/12 23:09	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167807	10/30/12 09:41	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-F13 (0-2 ft bgs) DUP**

**Lab Sample ID: 500-51780-2**

Date Collected: 10/26/12 10:15

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 76.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167735	10/29/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168401	11/02/12 23:12	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167807	10/30/12 09:41	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-F14 (0-2 ft bgs)**

**Lab Sample ID: 500-51780-3**

Date Collected: 10/26/12 10:20

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 84.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167735	10/29/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168401	11/02/12 23:28	TDS	TAL CHI
Total/NA	Analysis	6010B		20	168563	11/05/12 12:18	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167807	10/30/12 09:41	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-F15 (0-2 ft bgs)**

**Lab Sample ID: 500-51780-4**

Date Collected: 10/26/12 10:25

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 59.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167735	10/29/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168401	11/02/12 23:52	TDS	TAL CHI
Total/NA	Analysis	6010B		20	168563	11/05/12 12:54	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167807	10/30/12 09:41	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-F16 (0-2 ft bgs)**

**Lab Sample ID: 500-51780-5**

Date Collected: 10/26/12 10:30

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 83.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167735	10/29/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168401	11/02/12 23:56	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167807	10/30/12 09:41	CMV	TAL CHI

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

## Client Sample ID: ECH-S-IRM1-F17 (0-2 ft bgs)

Lab Sample ID: 500-51780-6

Date Collected: 10/26/12 10:35

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 67.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167735	10/29/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168401	11/03/12 00:00	TDS	TAL CHI
Total/NA	Analysis	6010B		20	168563	11/05/12 13:07	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167807	10/30/12 09:41	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-E1 (0-2 ft bgs)

Lab Sample ID: 500-51780-7

Date Collected: 10/26/12 10:40

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 89.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167735	10/29/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168401	11/03/12 00:05	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167807	10/30/12 09:41	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-E2 (0-2 ft bgs)

Lab Sample ID: 500-51780-8

Date Collected: 10/26/12 10:45

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 86.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167735	10/29/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168401	11/03/12 00:09	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167807	10/30/12 09:41	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-E3 (0-2 ft bgs)

Lab Sample ID: 500-51780-9

Date Collected: 10/26/12 10:50

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 85.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167735	10/29/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168401	11/03/12 00:23	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167807	10/30/12 09:41	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-E4 (0-2 ft bgs)

Lab Sample ID: 500-51780-10

Date Collected: 10/26/12 10:55

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 86.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167735	10/29/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168401	11/03/12 00:27	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167807	10/30/12 09:41	CMV	TAL CHI

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

## Client Sample ID: ECH-S-IRM1-E5 (0-2 ft bgs)

Lab Sample ID: 500-51780-11

Date Collected: 10/26/12 11:00

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 85.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167735	10/29/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168401	11/03/12 00:31	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167807	10/30/12 09:41	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-E6 (0-2 ft bgs)

Lab Sample ID: 500-51780-12

Date Collected: 10/26/12 11:05

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 85.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167735	10/29/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168401	11/03/12 00:35	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167807	10/30/12 09:41	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-E7 (0-2 ft bgs)

Lab Sample ID: 500-51780-13

Date Collected: 10/26/12 11:10

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 91.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167735	10/29/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168401	11/03/12 00:39	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167807	10/30/12 09:41	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-BFZ-43 (0-2)

Lab Sample ID: 500-51780-14

Date Collected: 10/26/12 08:00

Matrix: Solid

Date Received: 10/26/12 14:45

Percent Solids: 36.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			167735	10/29/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168401	11/03/12 00:43	TDS	TAL CHI
Total/NA	Analysis	6010B		20	168695	11/06/12 12:19	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	167807	10/30/12 09:41	CMV	TAL CHI

## Client Sample ID: ECH-EQBLK-1 (SPOON)

Lab Sample ID: 500-51780-15

Date Collected: 10/26/12 13:05

Matrix: Water

Date Received: 10/26/12 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			167822	10/30/12 08:30	LAH	TAL CHI
Total/NA	Analysis	6010B		1	168655	11/06/12 03:36	PJ	TAL CHI

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

**Client Sample ID: ECH-EQBLK-2 (AUGER)**

**Lab Sample ID: 500-51780-16**

**Date Collected: 10/26/12 13:10**

**Matrix: Water**

**Date Received: 10/26/12 14:45**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			167822	10/30/12 08:30	LAH	TAL CHI
Total/NA	Analysis	6010B		1	168655	11/06/12 03:42	PJ	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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# Certification Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51780-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13

Chicago  
2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

### Chain of Custody Record

**TestAmerica**  
THE LEADER IN ENVIRONMENTAL

TestAmerica Laboratories,

<b>Client Contact</b> Wanda Davis - URS Corp. ADQM Iron Hill Corporate Center, 4051 Ogietown Road, Suite 300 Newark, DE 19713 (302) 781-5892 (302) 781-5901 Fax Project Name: IRM Sampling Site Location: DuPont East Chicago, Indiana PO#: LBIO-66421, Client Project#: 9267-7720100C-WHO6507754	<b>Project Manager: Randy Palachek</b> Tel/Fax: 512.719.6006	<b>Site Contact: Keith Thompson</b> Lab Contact: Richard Wright	<b>Date: 10/26/12</b> Carrier: TA Courier	<b>COC No:</b> 1 of 2 COCs <b>Job No.</b> 500-51780 <b>SDG No.</b>
<b>Analysis Turnaround Time</b> Calendar (C) or Work Days (W) TAT if different from Below _____ <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		<b>Filtered Sample</b> Total Metals (As, Cd, Pb, Zn)		

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	Total Metals (As, Cd, Pb, Zn)	Sample Specific Notes
1 ECH-S-IRM1-F13 (0-2 ft bgs)	10/26/2012	1015	Composite	SOIL	1	N	X	
2 ECH-S-IRM1-F13 (0-2 ft bgs) DUP	10/26/2012	1015	Composite	SOIL	1	N	X	
3 ECH-S-IRM1-F14 (0-2 ft bgs)	10/26/2012	1020	Composite	SOIL	3	N	X	additional sample for MS/MSD
4 ECH-S-IRM1-F15 (0-2 ft bgs)	10/26/2012	1025	Composite	SOIL	1	N	X	
5 ECH-S-IRM1-F16 (0-2 ft bgs)	10/26/2012	1030	Composite	SOIL	1	N	X	
6 ECH-S-IRM1-F17 (0-2 ft bgs)	10/26/2012	1035	Composite	SOIL	1	N	X	
7 ECH-S-IRM1-E1 (0-2 ft bgs)	10/26/2012	1040	Composite	SOIL	1	N	X	
8 ECH-S-IRM1-E2 (0-2 ft bgs)	10/26/2012	1045	Composite	SOIL	1	N	X	
9 ECH-S-IRM1-E3 (0-2 ft bgs)	10/26/2012	1050	Composite	SOIL	1	N	X	
10 ECH-S-IRM1-E4 (0-2 ft bgs)	10/26/2012	1055	Composite	SOIL	1	N	X	
11 ECH-S-IRM1-E5 (0-2 ft bgs)	10/26/2012	1100	Composite	SOIL	1	N	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other \_\_\_\_\_

Possible Hazard Identification  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company: Parsons	Date/Time: 10/26/12 12:00	Received by:	Company: TA	Date/Time: 10/26/12 14:00
Relinquished by:	Company: TA-CHI	Date/Time: 10/26/12	Received by:	Company: TA	Date/Time: 10/26/12 1445
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:



## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-51780-1

**Login Number: 51780**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Lunt, Jeff T**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	3.5
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-51910-1  
Client Project/Site: IRM Sampling

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
11/6/2012 4:09:00 PM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51910-1

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**Job ID: 500-51910-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-51910-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 11/1/2012 7:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.2° C.

**Metals**

Method(s) 6010B: The matrix duplicate %RPD for sample 500-51910-3 was outside the control limits for As and Pb.

No other analytical or quality issues were noted.



# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51910-1

## Client Sample ID: ECH-S-IRM1-H1 (0-2 ft bgs)

Lab Sample ID: 500-51910-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	5.9		1.1	0.24	mg/Kg	1		☼	6010B	Total/NA
Cadmium	2.4		0.22	0.055	mg/Kg	1		☼	6010B	Total/NA
Lead	12		0.56	0.19	mg/Kg	1		☼	6010B	Total/NA
Zinc	290	B	2.2	0.76	mg/Kg	1		☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-H1 (0-2 ft bgs) DUP

Lab Sample ID: 500-51910-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	7.9		1.1	0.25	mg/Kg	1		☼	6010B	Total/NA
Cadmium	3.2		0.23	0.056	mg/Kg	1		☼	6010B	Total/NA
Lead	17		0.57	0.20	mg/Kg	1		☼	6010B	Total/NA
Zinc	360	B	2.3	0.78	mg/Kg	1		☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-H2 (0-2 ft bgs)

Lab Sample ID: 500-51910-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	5.7		1.3	0.29	mg/Kg	1		☼	6010B	Total/NA
Cadmium	0.089	J	0.26	0.066	mg/Kg	1		☼	6010B	Total/NA
Lead	3.2		0.66	0.23	mg/Kg	1		☼	6010B	Total/NA
Zinc	33	B	2.6	0.91	mg/Kg	1		☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-H3 (0-2 ft bgs)

Lab Sample ID: 500-51910-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	0.47	J	1.3	0.29	mg/Kg	1		☼	6010B	Total/NA
Lead	2.0		0.67	0.23	mg/Kg	1		☼	6010B	Total/NA
Zinc	38	B	2.7	0.92	mg/Kg	1		☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-H4 (0-2 ft bgs)

Lab Sample ID: 500-51910-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	1.2	J	1.5	0.32	mg/Kg	1		☼	6010B	Total/NA
Cadmium	0.17	J	0.29	0.072	mg/Kg	1		☼	6010B	Total/NA
Lead	11		0.73	0.25	mg/Kg	1		☼	6010B	Total/NA
Zinc	37	B	2.9	1.0	mg/Kg	1		☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-H5 (0-2 ft bgs)

Lab Sample ID: 500-51910-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	26		2.0	0.44	mg/Kg	1		☼	6010B	Total/NA
Cadmium	2.9		0.40	0.099	mg/Kg	1		☼	6010B	Total/NA
Lead	560		1.0	0.34	mg/Kg	1		☼	6010B	Total/NA
Zinc	660	B	4.0	1.4	mg/Kg	1		☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51910-1

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Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

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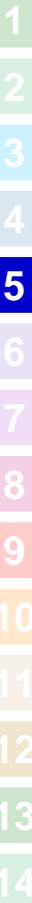
**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51910-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-51910-1	ECH-S-IRM1-H1 (0-2 ft bgs)	Solid	10/31/12 14:00	11/01/12 07:00
500-51910-2	ECH-S-IRM1-H1 (0-2 ft bgs) DUP	Solid	10/31/12 14:00	11/01/12 07:00
500-51910-3	ECH-S-IRM1-H2 (0-2 ft bgs)	Solid	10/31/12 13:20	11/01/12 07:00
500-51910-4	ECH-S-IRM1-H3 (0-2 ft bgs)	Solid	10/31/12 13:25	11/01/12 07:00
500-51910-5	ECH-S-IRM1-H4 (0-2 ft bgs)	Solid	10/31/12 13:30	11/01/12 07:00
500-51910-6	ECH-S-IRM1-H5 (0-2 ft bgs)	Solid	10/31/12 13:35	11/01/12 07:00

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51910-1

**Client Sample ID: ECH-S-IRM1-H1 (0-2 ft bgs)**

**Lab Sample ID: 500-51910-1**

**Date Collected: 10/31/12 14:00**

**Matrix: Solid**

**Date Received: 11/01/12 07:00**

**Percent Solids: 82.8**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.9		1.1	0.24	mg/Kg	✱	11/02/12 16:30	11/03/12 13:55	1
Cadmium	2.4		0.22	0.055	mg/Kg	✱	11/02/12 16:30	11/03/12 13:55	1
Lead	12		0.56	0.19	mg/Kg	✱	11/02/12 16:30	11/03/12 13:55	1
Zinc	290	B	2.2	0.76	mg/Kg	✱	11/02/12 16:30	11/03/12 13:55	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51910-1

**Client Sample ID: ECH-S-IRM1-H1 (0-2 ft bgs) DUP**

**Lab Sample ID: 500-51910-2**

Date Collected: 10/31/12 14:00

Matrix: Solid

Date Received: 11/01/12 07:00

Percent Solids: 82.0

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	7.9		1.1	0.25	mg/Kg	✱	11/02/12 16:30	11/03/12 14:01	1
Cadmium	3.2		0.23	0.056	mg/Kg	✱	11/02/12 16:30	11/03/12 14:01	1
Lead	17		0.57	0.20	mg/Kg	✱	11/02/12 16:30	11/03/12 14:01	1
Zinc	360	B	2.3	0.78	mg/Kg	✱	11/02/12 16:30	11/03/12 14:01	1

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51910-1

**Client Sample ID: ECH-S-IRM1-H2 (0-2 ft bgs)**

**Lab Sample ID: 500-51910-3**

Date Collected: 10/31/12 13:20

Matrix: Solid

Date Received: 11/01/12 07:00

Percent Solids: 68.5

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.7		1.3	0.29	mg/Kg	✱	11/02/12 16:30	11/03/12 14:08	1
Cadmium	0.089	J	0.26	0.066	mg/Kg	✱	11/02/12 16:30	11/03/12 14:08	1
Lead	3.2		0.66	0.23	mg/Kg	✱	11/02/12 16:30	11/03/12 14:08	1
Zinc	33	B	2.6	0.91	mg/Kg	✱	11/02/12 16:30	11/03/12 14:08	1

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51910-1

**Client Sample ID: ECH-S-IRM1-H3 (0-2 ft bgs)**

**Lab Sample ID: 500-51910-4**

**Date Collected: 10/31/12 13:25**

**Matrix: Solid**

**Date Received: 11/01/12 07:00**

**Percent Solids: 70.9**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.47	J	1.3	0.29	mg/Kg	✱	11/02/12 16:30	11/03/12 14:55	1
Cadmium	ND		0.27	0.067	mg/Kg	✱	11/02/12 16:30	11/03/12 14:55	1
Lead	2.0		0.67	0.23	mg/Kg	✱	11/02/12 16:30	11/03/12 14:55	1
Zinc	38	B	2.7	0.92	mg/Kg	✱	11/02/12 16:30	11/03/12 14:55	1

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51910-1

**Client Sample ID: ECH-S-IRM1-H4 (0-2 ft bgs)**

**Lab Sample ID: 500-51910-5**

**Date Collected: 10/31/12 13:30**

**Matrix: Solid**

**Date Received: 11/01/12 07:00**

**Percent Solids: 67.2**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.2	J	1.5	0.32	mg/Kg	☆☆	11/02/12 16:30	11/03/12 15:02	1
Cadmium	0.17	J	0.29	0.072	mg/Kg	☆☆	11/02/12 16:30	11/03/12 15:02	1
Lead	11		0.73	0.25	mg/Kg	☆☆	11/02/12 16:30	11/03/12 15:02	1
Zinc	37	B	2.9	1.0	mg/Kg	☆☆	11/02/12 16:30	11/03/12 15:02	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51910-1

**Client Sample ID: ECH-S-IRM1-H5 (0-2 ft bgs)**

**Lab Sample ID: 500-51910-6**

**Date Collected: 10/31/12 13:35**

**Matrix: Solid**

**Date Received: 11/01/12 07:00**

**Percent Solids: 48.2**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	26		2.0	0.44	mg/Kg	✱	11/02/12 16:30	11/03/12 15:08	1
Cadmium	2.9		0.40	0.099	mg/Kg	✱	11/02/12 16:30	11/03/12 15:08	1
Lead	560		1.0	0.34	mg/Kg	✱	11/02/12 16:30	11/03/12 15:08	1
Zinc	660	B	4.0	1.4	mg/Kg	✱	11/02/12 16:30	11/03/12 15:08	1

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# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51910-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F	Duplicate RPD exceeds the control limit

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
RER	Relative error ratio
DER	Duplicate error ratio (normalized absolute difference)
DLC	Decision level concentration
RL	Reporting Limit or Requested Limit (Radiochemistry only)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51910-1

## Metals

### Prep Batch: 168366

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51910-1	ECH-S-IRM1-H1 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51910-2	ECH-S-IRM1-H1 (0-2 ft bgs) DUP	Total/NA	Solid	3050B	
500-51910-3	ECH-S-IRM1-H2 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51910-3 DU	ECH-S-IRM1-H2 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51910-3 MS	ECH-S-IRM1-H2 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51910-3 MSD	ECH-S-IRM1-H2 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51910-4	ECH-S-IRM1-H3 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51910-5	ECH-S-IRM1-H4 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-51910-6	ECH-S-IRM1-H5 (0-2 ft bgs)	Total/NA	Solid	3050B	
LCS 500-168366/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-168366/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 168470

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51910-1	ECH-S-IRM1-H1 (0-2 ft bgs)	Total/NA	Solid	6010B	168366
500-51910-2	ECH-S-IRM1-H1 (0-2 ft bgs) DUP	Total/NA	Solid	6010B	168366
500-51910-3	ECH-S-IRM1-H2 (0-2 ft bgs)	Total/NA	Solid	6010B	168366
500-51910-3 DU	ECH-S-IRM1-H2 (0-2 ft bgs)	Total/NA	Solid	6010B	168366
500-51910-3 MS	ECH-S-IRM1-H2 (0-2 ft bgs)	Total/NA	Solid	6010B	168366
500-51910-3 MSD	ECH-S-IRM1-H2 (0-2 ft bgs)	Total/NA	Solid	6010B	168366
500-51910-4	ECH-S-IRM1-H3 (0-2 ft bgs)	Total/NA	Solid	6010B	168366
500-51910-5	ECH-S-IRM1-H4 (0-2 ft bgs)	Total/NA	Solid	6010B	168366
500-51910-6	ECH-S-IRM1-H5 (0-2 ft bgs)	Total/NA	Solid	6010B	168366
LCS 500-168366/2-A	Lab Control Sample	Total/NA	Solid	6010B	168366
MB 500-168366/1-A	Method Blank	Total/NA	Solid	6010B	168366

## General Chemistry

### Analysis Batch: 168198

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-51910-1	ECH-S-IRM1-H1 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51910-2	ECH-S-IRM1-H1 (0-2 ft bgs) DUP	Total/NA	Solid	Moisture	
500-51910-3	ECH-S-IRM1-H2 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51910-3 DU	ECH-S-IRM1-H2 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51910-3 MS	ECH-S-IRM1-H2 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51910-3 MSD	ECH-S-IRM1-H2 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51910-4	ECH-S-IRM1-H3 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51910-5	ECH-S-IRM1-H4 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-51910-6	ECH-S-IRM1-H5 (0-2 ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51910-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-168366/1-A**  
**Matrix: Solid**  
**Analysis Batch: 168470**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 168366**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
Arsenic	ND		1.0	0.22	mg/Kg		11/02/12 16:30	11/03/12 12:16		1
Cadmium	ND		0.20	0.050	mg/Kg		11/02/12 16:30	11/03/12 12:16		1
Lead	ND		0.50	0.17	mg/Kg		11/02/12 16:30	11/03/12 12:16		1
Zinc	0.705	J	2.0	0.69	mg/Kg		11/02/12 16:30	11/03/12 12:16		1

**Lab Sample ID: LCS 500-168366/2-A**  
**Matrix: Solid**  
**Analysis Batch: 168470**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 168366**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.21		mg/Kg		92	80 - 120
Cadmium	5.00	4.74		mg/Kg		95	80 - 120
Lead	10.0	9.79		mg/Kg		98	80 - 120
Zinc	50.0	47.7		mg/Kg		95	80 - 120

**Lab Sample ID: 500-51910-3 MS**  
**Matrix: Solid**  
**Analysis Batch: 168470**

**Client Sample ID: ECH-S-IRM1-H2 (0-2 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 168366**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	5.7		14.1	20.2		mg/Kg	☼	104	75 - 125
Cadmium	0.089	J	7.03	6.81		mg/Kg	☼	96	75 - 125
Lead	3.2		14.1	17.2		mg/Kg	☼	99	75 - 125
Zinc	33	B	70.3	105		mg/Kg	☼	101	75 - 125

**Lab Sample ID: 500-51910-3 MSD**  
**Matrix: Solid**  
**Analysis Batch: 168470**

**Client Sample ID: ECH-S-IRM1-H2 (0-2 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 168366**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	5.7		14.0	20.7		mg/Kg	☼	107	75 - 125	2	20
Cadmium	0.089	J	7.00	6.75		mg/Kg	☼	95	75 - 125	1	20
Lead	3.2		14.0	17.2		mg/Kg	☼	100	75 - 125	0	20
Zinc	33	B	70.0	104		mg/Kg	☼	101	75 - 125	0	20

**Lab Sample ID: 500-51910-3 DU**  
**Matrix: Solid**  
**Analysis Batch: 168470**

**Client Sample ID: ECH-S-IRM1-H2 (0-2 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 168366**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	5.7		7.18	F	mg/Kg	☼	23	20
Cadmium	0.089	J	0.0732	J	mg/Kg	☼	19	20
Lead	3.2		4.07	F	mg/Kg	☼	23	20
Zinc	33	B	29.0		mg/Kg	☼	14	20

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51910-1

## Client Sample ID: ECH-S-IRM1-H1 (0-2 ft bgs)

Lab Sample ID: 500-51910-1

Date Collected: 10/31/12 14:00

Matrix: Solid

Date Received: 11/01/12 07:00

Percent Solids: 82.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			168366	11/02/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168470	11/03/12 13:55	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	168198	11/01/12 14:44	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-H1 (0-2 ft bgs) DUP

Lab Sample ID: 500-51910-2

Date Collected: 10/31/12 14:00

Matrix: Solid

Date Received: 11/01/12 07:00

Percent Solids: 82.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			168366	11/02/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168470	11/03/12 14:01	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	168198	11/01/12 14:44	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-H2 (0-2 ft bgs)

Lab Sample ID: 500-51910-3

Date Collected: 10/31/12 13:20

Matrix: Solid

Date Received: 11/01/12 07:00

Percent Solids: 68.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			168366	11/02/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168470	11/03/12 14:08	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	168198	11/01/12 14:44	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-H3 (0-2 ft bgs)

Lab Sample ID: 500-51910-4

Date Collected: 10/31/12 13:25

Matrix: Solid

Date Received: 11/01/12 07:00

Percent Solids: 70.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			168366	11/02/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168470	11/03/12 14:55	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	168198	11/01/12 14:44	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-H4 (0-2 ft bgs)

Lab Sample ID: 500-51910-5

Date Collected: 10/31/12 13:30

Matrix: Solid

Date Received: 11/01/12 07:00

Percent Solids: 67.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			168366	11/02/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168470	11/03/12 15:02	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	168198	11/01/12 14:44	CMV	TAL CHI

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-51910-1

**Client Sample ID: ECH-S-IRM1-H5 (0-2 ft bgs)**

**Lab Sample ID: 500-51910-6**

**Date Collected: 10/31/12 13:35**

**Matrix: Solid**

**Date Received: 11/01/12 07:00**

**Percent Solids: 48.2**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			168366	11/02/12 16:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	168470	11/03/12 15:08	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	168198	11/01/12 14:44	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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# Certification Summary

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-51910-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13



Chicago  
2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

### Chain of Custody Record

**TestAmerica**  
THE LEADER IN ENVIRONMENTAL

TestAmerica Laboratories,

Client Contact		Project Manager: Randy Palachek		Site Contact: Keith Thompson		Date: 10/31/12		COC No:	
Wanda Davis - URS Corp. ADQM		Tel/Fax: 512.719.6006		Lab Contact: Richard Wright		Carrier: TA Courier		1 of 1 COCs	
Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300		Analysis Turnaround Time		Filtered Sample Total Metals (As, Cd, Pb, Zn)				Job No.	
Newark, DE 19713		Calendar (C) or Work Days (W)						500-51910	
(302) 781-5892		TAT if different from Below						SDG No.	
(302) 781-5901 Fax		<input checked="" type="checkbox"/> 2 weeks							
Project Name: IRM Sampling		<input type="checkbox"/> 1 week							
Site Location: DuPont East Chicago, Indiana		<input type="checkbox"/> 2 days							
PO#: LBIO-66421, Client Project#: 9267-7720100C-WHO6507754		<input type="checkbox"/> 1 day						Sample Specific Notes:	
Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	Total Metals (As, Cd, Pb, Zn)		
1 ECH-S-IRM1-H1 (0-2 ft bgs)	10/31/2012	14:00	Composite	SOIL	1	N	X		
2 ECH-S-IRM1-H1 (0-2 ft bgs) DUP	10/31/2012	14:00	Composite	SOIL	1	N	X		
3 ECH-S-IRM1-H2 (0-2 ft bgs)	10/31/2012	13:20	Composite	SOIL	3	N	X	additional sample for MS/MSD	
4 ECH-S-IRM1-H3 (0-2 ft bgs)	10/31/2012	13:25	Composite	SOIL	1	N	X		
5 ECH-S-IRM1-H4 (0-2 ft bgs)	10/31/2012	13:30	Composite	SOIL	1	N	X		
6 ECH-S-IRM1-H5 (0-2 ft bgs)	10/31/2012	13:35	Composite	SOIL	1	N	X		
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other									
Possible Hazard Identification					Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)				
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown					<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months				
Special Instructions/QC Requirements & Comments:									
Relinquished by:		Company: Parsons		Date/Time: 10/31/12 1730		Received by:		Company: TA-chi	
Relinquished by:		Company:		Date/Time:		Received by:		Company: TA	
Relinquished by:		Company:		Date/Time:		Received by:		Date/Time: 11/1/12 0700	

## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-51910-1

**Login Number: 51910**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Lunt, Jeff T**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	3.2
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-52228-1  
Client Project/Site: IRM Sampling

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
11/13/2012 9:07:49 AM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52228-1

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**Job ID: 500-52228-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-52228-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 11/9/2012 3:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.0° C.

**Metals**

Method(s) 6010B: The matrix spike / matrix spike duplicate (MS/MSD) precision for sample 500-52228-1 was outside control limits for Pb. The associated laboratory control sample (LCS) met acceptance criteria.

No other analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52228-1

## Client Sample ID: ECH-S-IRM1-HW-E1-FLOOR (3-3.5 ft bgs)

Lab Sample ID: 500-52228-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	0.21	J	0.98	0.21	mg/Kg	1		*	6010B	Total/NA
Cadmium	0.099	J	0.20	0.049	mg/Kg	1		*	6010B	Total/NA
Lead	290		0.49	0.17	mg/Kg	1		*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-D10 (0-2 ft bgs)

Lab Sample ID: 500-52228-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	8.4		1.6	0.34	mg/Kg	1		*	6010B	Total/NA
Cadmium	40		0.31	0.078	mg/Kg	1		*	6010B	Total/NA
Lead	190		0.78	0.27	mg/Kg	1		*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-E4-FLOOR (4-4.5 ft bgs)

Lab Sample ID: 500-52228-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	3.4		0.96	0.21	mg/Kg	1		*	6010B	Total/NA
Cadmium	4.5		0.19	0.047	mg/Kg	1		*	6010B	Total/NA
Lead	1000		0.48	0.16	mg/Kg	1		*	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52228-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

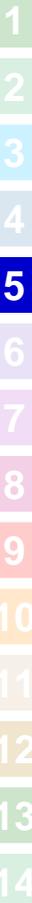
**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52228-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-52228-1	ECH-S-IRM1-HW-E1-FLOOR (3-3.5 ft bgs)	Solid	11/09/12 11:00	11/09/12 15:00
500-52228-2	ECH-S-IRM1-HW-D10 (0-2 ft bgs)	Solid	11/09/12 11:15	11/09/12 15:00
500-52228-3	ECH-S-IRM1-HW-E4-FLOOR (4-4.5 ft bgs)	Solid	11/09/12 12:00	11/09/12 15:00

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52228-1

**Client Sample ID: ECH-S-IRM1-HW-E1-FLOOR (3-3.5 ft bgs)**

**Lab Sample ID: 500-52228-1**

**Date Collected: 11/09/12 11:00**

**Matrix: Solid**

**Date Received: 11/09/12 15:00**

**Percent Solids: 91.0**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.21	J	0.98	0.21	mg/Kg	✱	11/10/12 10:30	11/12/12 14:37	1
Cadmium	0.099	J	0.20	0.049	mg/Kg	✱	11/10/12 10:30	11/12/12 14:37	1
Lead	290		0.49	0.17	mg/Kg	✱	11/10/12 10:30	11/12/12 14:37	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-52228-1

**Client Sample ID: ECH-S-IRM1-HW-D10 (0-2 ft bgs)**

**Lab Sample ID: 500-52228-2**

Date Collected: 11/09/12 11:15

Matrix: Solid

Date Received: 11/09/12 15:00

Percent Solids: 63.4

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	8.4		1.6	0.34	mg/Kg	☼	11/10/12 10:30	11/12/12 14:57	1
Cadmium	40		0.31	0.078	mg/Kg	☼	11/10/12 10:30	11/12/12 14:57	1
Lead	190		0.78	0.27	mg/Kg	☼	11/10/12 10:30	11/12/12 14:57	1

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52228-1

**Client Sample ID: ECH-S-IRM1-HW-E4-FLOOR (4-4.5 ft bgs)**

**Lab Sample ID: 500-52228-3**

**Date Collected: 11/09/12 12:00**

**Matrix: Solid**

**Date Received: 11/09/12 15:00**

**Percent Solids: 91.2**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.4		0.96	0.21	mg/Kg	✱	11/10/12 10:30	11/12/12 15:01	1
Cadmium	4.5		0.19	0.047	mg/Kg	✱	11/10/12 10:30	11/12/12 15:01	1
Lead	1000		0.48	0.16	mg/Kg	✱	11/10/12 10:30	11/12/12 15:01	1

# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52228-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
F	RPD of the MS and MSD exceeds the control limits

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
RER	Relative error ratio
DER	Duplicate error ratio (normalized absolute difference)
DLC	Decision level concentration
RL	Reporting Limit or Requested Limit (Radiochemistry only)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52228-1

## Metals

### Prep Batch: 169225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52228-1	ECH-S-IRM1-HW-E1-FLOOR (3-3.5 ft bgs)	Total/NA	Solid	3050B	
500-52228-1 DU	ECH-S-IRM1-HW-E1-FLOOR (3-3.5 ft bgs)	Total/NA	Solid	3050B	
500-52228-1 MS	ECH-S-IRM1-HW-E1-FLOOR (3-3.5 ft bgs)	Total/NA	Solid	3050B	
500-52228-1 MSD	ECH-S-IRM1-HW-E1-FLOOR (3-3.5 ft bgs)	Total/NA	Solid	3050B	
500-52228-2	ECH-S-IRM1-HW-D10 (0-2 ft bgs)	Total/NA	Solid	3050B	
500-52228-3	ECH-S-IRM1-HW-E4-FLOOR (4-4.5 ft bgs)	Total/NA	Solid	3050B	
LCS 500-169225/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-169225/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 169430

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52228-1	ECH-S-IRM1-HW-E1-FLOOR (3-3.5 ft bgs)	Total/NA	Solid	6010B	169225
500-52228-1 DU	ECH-S-IRM1-HW-E1-FLOOR (3-3.5 ft bgs)	Total/NA	Solid	6010B	169225
500-52228-1 MS	ECH-S-IRM1-HW-E1-FLOOR (3-3.5 ft bgs)	Total/NA	Solid	6010B	169225
500-52228-1 MSD	ECH-S-IRM1-HW-E1-FLOOR (3-3.5 ft bgs)	Total/NA	Solid	6010B	169225
500-52228-2	ECH-S-IRM1-HW-D10 (0-2 ft bgs)	Total/NA	Solid	6010B	169225
500-52228-3	ECH-S-IRM1-HW-E4-FLOOR (4-4.5 ft bgs)	Total/NA	Solid	6010B	169225
LCS 500-169225/2-A	Lab Control Sample	Total/NA	Solid	6010B	169225
MB 500-169225/1-A	Method Blank	Total/NA	Solid	6010B	169225

## General Chemistry

### Analysis Batch: 169190

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52228-1	ECH-S-IRM1-HW-E1-FLOOR (3-3.5 ft bgs)	Total/NA	Solid	Moisture	
500-52228-2	ECH-S-IRM1-HW-D10 (0-2 ft bgs)	Total/NA	Solid	Moisture	
500-52228-3	ECH-S-IRM1-HW-E4-FLOOR (4-4.5 ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52228-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-169225/1-A**  
**Matrix: Solid**  
**Analysis Batch: 169430**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 169225**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		11/10/12 10:30	11/12/12 14:22	1
Cadmium	ND		0.20	0.050	mg/Kg		11/10/12 10:30	11/12/12 14:22	1
Lead	ND		0.50	0.17	mg/Kg		11/10/12 10:30	11/12/12 14:22	1

**Lab Sample ID: LCS 500-169225/2-A**  
**Matrix: Solid**  
**Analysis Batch: 169430**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 169225**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	8.98		mg/Kg		90	80 - 120
Cadmium	5.00	4.74		mg/Kg		95	80 - 120
Lead	10.0	9.75		mg/Kg		98	80 - 120

**Lab Sample ID: 500-52228-1 MS**  
**Matrix: Solid**  
**Analysis Batch: 169430**

**Client Sample ID: ECH-S-IRM1-HW-E1-FLOOR (3-3.5 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 169225**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.21	J	10.1	9.48		mg/Kg	✱	92	75 - 125
Cadmium	0.099	J	5.03	4.60		mg/Kg	✱	89	75 - 125
Lead	290		10.1	404	4	mg/Kg	✱	1119	75 - 125

**Lab Sample ID: 500-52228-1 MSD**  
**Matrix: Solid**  
**Analysis Batch: 169430**

**Client Sample ID: ECH-S-IRM1-HW-E1-FLOOR (3-3.5 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 169225**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	0.21	J	10.2	10.0		mg/Kg	✱	96	75 - 125	6	20
Cadmium	0.099	J	5.11	4.93		mg/Kg	✱	94	75 - 125	7	20
Lead	290		10.2	324	4 F	mg/Kg	✱	321	75 - 125	22	20

**Lab Sample ID: 500-52228-1 DU**  
**Matrix: Solid**  
**Analysis Batch: 169430**

**Client Sample ID: ECH-S-IRM1-HW-E1-FLOOR (3-3.5 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 169225**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	0.21	J	ND		mg/Kg	✱	NC	20
Cadmium	0.099	J	0.0972	J	mg/Kg	✱	2	20
Lead	290		352		mg/Kg	✱	19	20

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52228-1

## Client Sample ID: ECH-S-IRM1-HW-E1-FLOOR (3-3.5 ft bgs)

Lab Sample ID: 500-52228-1

Date Collected: 11/09/12 11:00

Matrix: Solid

Date Received: 11/09/12 15:00

Percent Solids: 91.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			169225	11/10/12 10:30	PFK	TAL CHI
Total/NA	Analysis	6010B		1	169430	11/12/12 14:37	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	169190	11/09/12 15:24	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-D10 (0-2 ft bgs)

Lab Sample ID: 500-52228-2

Date Collected: 11/09/12 11:15

Matrix: Solid

Date Received: 11/09/12 15:00

Percent Solids: 63.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			169225	11/10/12 10:30	PFK	TAL CHI
Total/NA	Analysis	6010B		1	169430	11/12/12 14:57	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	169190	11/09/12 15:24	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-E4-FLOOR (4-4.5 ft bgs)

Lab Sample ID: 500-52228-3

Date Collected: 11/09/12 12:00

Matrix: Solid

Date Received: 11/09/12 15:00

Percent Solids: 91.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			169225	11/10/12 10:30	PFK	TAL CHI
Total/NA	Analysis	6010B		1	169430	11/12/12 15:01	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	169190	11/09/12 15:24	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52228-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13

Chicago  
2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

### Chain of Custody Record

**TestAmerica**  
THE LEADER IN ENVIRONMENTAL

TestAmerica Laboratories,

11/9/12

COC No: 500-52228  
1 of 1 COCs

Client Contact Wanda Davis - URS Corp. ADQM	Project Manager: Randy Palachek Tel/Fax: 512.719.6006	Site Contact: Keith Thompson Lab Contact: Richard Wright	Date: <u>11/9/12</u> Carrier: TA Courier
Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300 Newark, DE 19713 (302) 781-5892 (302) 781-5901 Fax Project Name: IRM Sampling Site Location: DuPont East Chicago, Indiana PO#: LBIO-66421, Client Project#: 9267-7720100C-WHO6507754	<b>Analysis Turnaround Time</b> Calendar (C) or Work Days (W) _____ TAT if different from Below _____ <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input checked="" type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Job No. _____ SDG No. _____

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	Total Metals (As, Cd, Pb)	Sample Specific Notes
ECH-S-IRM1-HW-E1 FLOOR (3-3.5 ft bgs)	11/9/2012	11:00	Composite	SOIL	1	N	X	48 hr TAT
ECH-S-IRM1-HW-D10 (0-2 ft bgs)	11/9/2012	11:15	Composite	SOIL	1	N	X	
ECH-S-IRM1-HW-E4 FLOOR (4-4.5 ft bgs)	11/9/2012	12:00	Composite	SOIL	1	N	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other \_\_\_\_\_

Possible Hazard Identification  
 Non-Hazard     Flammable     Skin Irritant     Poison B     Unknown

Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month )  
 Return To Client     Disposal By Lab     Archive For \_\_\_\_\_ Months

Special Instructions/QC Requirements & Comments:

Relinquished by: <i>[Signature]</i>	Company: <u>Parsons</u>	Date/Time: <u>11/9/12 14:00</u>	Received by: <i>[Signature]</i>	Company: <u>TestAmerica</u>	Date/Time: <u>11/9/12 1400</u>
Relinquished by: <i>[Signature]</i>	Company: <u>TestAmerica</u>	Date/Time: <u>11/9/12 1500</u>	Received by: <i>[Signature]</i>	Company: <u>TA-CHT</u>	Date/Time: <u>11/9/12 1500</u>

## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-52228-1

**Login Number: 52228**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Scott, Sherri L**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-52266-1  
Client Project/Site: IRM Sampling

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
11/19/2012 12:11:11 PM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52266-1

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**Job ID: 500-52266-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-52266-1**

**Comments**

No additional comments.

**Receipt**

The sample was received on 11/12/2012 3:40 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.5° C.

**Metals**

No analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52266-1

Client Sample ID: ECH-S-IRM1-C10(0-2 ft bgs)

Lab Sample ID: 500-52266-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	1.5		1.2	0.27	mg/Kg	1	☼	6010B	Total/NA
Cadmium	1.2	B	0.25	0.061	mg/Kg	1	☼	6010B	Total/NA
Lead	9.9		0.61	0.21	mg/Kg	1	☼	6010B	Total/NA
Zinc	310	B	2.5	0.84	mg/Kg	1	☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52266-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52266-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-52266-1	ECH-S-IRM1-C10(0-2 ft bgs)	Solid	11/12/12 10:35	11/12/12 15:40

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-52266-1

**Client Sample ID: ECH-S-IRM1-C10(0-2 ft bgs)**

**Lab Sample ID: 500-52266-1**

**Date Collected: 11/12/12 10:35**

**Matrix: Solid**

**Date Received: 11/12/12 15:40**

**Percent Solids: 77.1**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5		1.2	0.27	mg/Kg	✱	11/13/12 08:21	11/17/12 15:51	1
Cadmium	1.2	B	0.25	0.061	mg/Kg	✱	11/13/12 08:21	11/17/12 15:51	1
Lead	9.9		0.61	0.21	mg/Kg	✱	11/13/12 08:21	11/17/12 15:51	1
Zinc	310	B	2.5	0.84	mg/Kg	✱	11/13/12 08:21	11/17/12 15:51	1



# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52266-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52266-1

## Metals

### Prep Batch: 169467

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52266-1	ECH-S-IRM1-C10(0-2 ft bgs)	Total/NA	Solid	3050B	
LCS 500-169467/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-169467/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 170175

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52266-1	ECH-S-IRM1-C10(0-2 ft bgs)	Total/NA	Solid	6010B	169467
LCS 500-169467/2-A	Lab Control Sample	Total/NA	Solid	6010B	169467
MB 500-169467/1-A	Method Blank	Total/NA	Solid	6010B	169467

## General Chemistry

### Analysis Batch: 169473

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52266-1	ECH-S-IRM1-C10(0-2 ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52266-1

## Method: 6010B - Metals (ICP)

Lab Sample ID: MB 500-169467/1-A

Matrix: Solid

Analysis Batch: 170175

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 169467

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		11/13/12 08:21	11/17/12 14:52	1
Cadmium	0.0668	J	0.20	0.050	mg/Kg		11/13/12 08:21	11/17/12 14:52	1
Lead	ND		0.50	0.17	mg/Kg		11/13/12 08:21	11/17/12 14:52	1
Zinc	0.751	J	2.0	0.69	mg/Kg		11/13/12 08:21	11/17/12 14:52	1

Lab Sample ID: LCS 500-169467/2-A

Matrix: Solid

Analysis Batch: 170175

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 169467

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.04		mg/Kg		90	80 - 120
Cadmium	5.00	4.81		mg/Kg		96	80 - 120
Lead	10.0	9.71		mg/Kg		97	80 - 120
Zinc	50.0	46.8		mg/Kg		94	80 - 120

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52266-1

**Client Sample ID: ECH-S-IRM1-C10(0-2 ft bgs)**

**Lab Sample ID: 500-52266-1**

**Date Collected: 11/12/12 10:35**

**Matrix: Solid**

**Date Received: 11/12/12 15:40**

**Percent Solids: 77.1**

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Prep	3050B			169467	11/13/12 08:21	LAH	TAL CHI
Total/NA	Analysis	6010B		1	170175	11/17/12 15:51	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	169473	11/13/12 08:39	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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# Certification Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52266-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13



## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-52266-1

**Login Number: 52266**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Scott, Sherri L**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-52522-1  
Client Project/Site: IRM Sampling

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
11/21/2012 2:36:41 PM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52522-1

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**Job ID: 500-52522-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-52522-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 11/19/2012 3:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.2° C.

**Metals**

Method(s) 6010B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for sample 500-52522-1 were outside control limits for Zn. The associated laboratory control sample (LCS) recovery met acceptance criteria.

No other analytical or quality issues were noted.



# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52522-1

## Client Sample ID: ECH-S-IRM1-I1(0-2 ft bgs)

Lab Sample ID: 500-52522-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	1.5		1.3	0.29	mg/Kg	1		☼	6010B	Total/NA
Cadmium	0.17	J	0.26	0.065	mg/Kg	1		☼	6010B	Total/NA
Lead	2.6		0.66	0.23	mg/Kg	1		☼	6010B	Total/NA
Zinc	160		2.6	0.91	mg/Kg	1		☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-I2(0-2 ft bgs)

Lab Sample ID: 500-52522-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	1.7		1.2	0.26	mg/Kg	1		☼	6010B	Total/NA
Cadmium	0.21	J	0.24	0.059	mg/Kg	1		☼	6010B	Total/NA
Lead	4.6		0.60	0.21	mg/Kg	1		☼	6010B	Total/NA
Zinc	230		2.4	0.82	mg/Kg	1		☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52522-1

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Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

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**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52522-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-52522-1	ECH-S-IRM1-I1(0-2 ft bgs)	Solid	11/19/12 11:45	11/19/12 15:45
500-52522-2	ECH-S-IRM1-I2(0-2 ft bgs)	Solid	11/19/12 12:00	11/19/12 15:45

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52522-1

**Client Sample ID: ECH-S-IRM1-I1(0-2 ft bgs)**

**Lab Sample ID: 500-52522-1**

**Date Collected: 11/19/12 11:45**

**Matrix: Solid**

**Date Received: 11/19/12 15:45**

**Percent Solids: 72.4**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5		1.3	0.29	mg/Kg	☆☆	11/20/12 10:15	11/21/12 08:05	1
Cadmium	0.17	J	0.26	0.065	mg/Kg	☆☆	11/20/12 10:15	11/21/12 10:38	1
Lead	2.6		0.66	0.23	mg/Kg	☆☆	11/20/12 10:15	11/21/12 08:05	1
Zinc	160		2.6	0.91	mg/Kg	☆☆	11/20/12 10:15	11/21/12 08:05	1

# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52522-1

**Client Sample ID: ECH-S-IRM1-I2(0-2 ft bgs)**

**Lab Sample ID: 500-52522-2**

**Date Collected: 11/19/12 12:00**

**Matrix: Solid**

**Date Received: 11/19/12 15:45**

**Percent Solids: 72.5**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.7		1.2	0.26	mg/Kg	✱	11/20/12 10:15	11/21/12 08:54	1
Cadmium	0.21	J	0.24	0.059	mg/Kg	✱	11/20/12 10:15	11/21/12 11:06	1
Lead	4.6		0.60	0.21	mg/Kg	✱	11/20/12 10:15	11/21/12 08:54	1
Zinc	230		2.4	0.82	mg/Kg	✱	11/20/12 10:15	11/21/12 08:54	1

# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52522-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F	MS or MSD exceeds the control limits

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52522-1

## Metals

### Prep Batch: 170394

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52522-1	ECH-S-IRM1-I1(0-2 ft bgs)	Total/NA	Solid	3050B	
500-52522-1 DU	ECH-S-IRM1-I1(0-2 ft bgs)	Total/NA	Solid	3050B	
500-52522-1 MS	ECH-S-IRM1-I1(0-2 ft bgs)	Total/NA	Solid	3050B	
500-52522-1 MSD	ECH-S-IRM1-I1(0-2 ft bgs)	Total/NA	Solid	3050B	
500-52522-2	ECH-S-IRM1-I2(0-2 ft bgs)	Total/NA	Solid	3050B	
LCS 500-170394/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-170394/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 170562

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52522-1	ECH-S-IRM1-I1(0-2 ft bgs)	Total/NA	Solid	6010B	170394
500-52522-1 DU	ECH-S-IRM1-I1(0-2 ft bgs)	Total/NA	Solid	6010B	170394
500-52522-1 MS	ECH-S-IRM1-I1(0-2 ft bgs)	Total/NA	Solid	6010B	170394
500-52522-1 MSD	ECH-S-IRM1-I1(0-2 ft bgs)	Total/NA	Solid	6010B	170394
500-52522-2	ECH-S-IRM1-I2(0-2 ft bgs)	Total/NA	Solid	6010B	170394
LCS 500-170394/2-A	Lab Control Sample	Total/NA	Solid	6010B	170394
MB 500-170394/1-A	Method Blank	Total/NA	Solid	6010B	170394

### Analysis Batch: 170609

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52522-1	ECH-S-IRM1-I1(0-2 ft bgs)	Total/NA	Solid	6010B	170394
500-52522-1 DU	ECH-S-IRM1-I1(0-2 ft bgs)	Total/NA	Solid	6010B	170394
500-52522-1 MS	ECH-S-IRM1-I1(0-2 ft bgs)	Total/NA	Solid	6010B	170394
500-52522-1 MSD	ECH-S-IRM1-I1(0-2 ft bgs)	Total/NA	Solid	6010B	170394
500-52522-2	ECH-S-IRM1-I2(0-2 ft bgs)	Total/NA	Solid	6010B	170394
LCS 500-170394/2-A	Lab Control Sample	Total/NA	Solid	6010B	170394
MB 500-170394/1-A	Method Blank	Total/NA	Solid	6010B	170394

## General Chemistry

### Analysis Batch: 170391

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52522-1	ECH-S-IRM1-I1(0-2 ft bgs)	Total/NA	Solid	Moisture	
500-52522-1 MS	ECH-S-IRM1-I1(0-2 ft bgs)	Total/NA	Solid	Moisture	
500-52522-1 MSD	ECH-S-IRM1-I1(0-2 ft bgs)	Total/NA	Solid	Moisture	
500-52522-2	ECH-S-IRM1-I2(0-2 ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52522-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-170394/1-A**  
**Matrix: Solid**  
**Analysis Batch: 170562**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 170394**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		11/20/12 10:15	11/21/12 05:31	1
Lead	ND		0.50	0.17	mg/Kg		11/20/12 10:15	11/21/12 05:31	1
Zinc	ND		2.0	0.69	mg/Kg		11/20/12 10:15	11/21/12 05:31	1

**Lab Sample ID: MB 500-170394/1-A**  
**Matrix: Solid**  
**Analysis Batch: 170609**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 170394**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		0.20	0.050	mg/Kg		11/20/12 10:15	11/21/12 09:46	1

**Lab Sample ID: LCS 500-170394/2-A**  
**Matrix: Solid**  
**Analysis Batch: 170562**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 170394**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.04		mg/Kg		90	80 - 120
Lead	10.0	9.64		mg/Kg		96	80 - 120
Zinc	50.0	46.0		mg/Kg		92	80 - 120

**Lab Sample ID: LCS 500-170394/2-A**  
**Matrix: Solid**  
**Analysis Batch: 170609**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 170394**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	5.00	4.55		mg/Kg		91	80 - 120

**Lab Sample ID: 500-52522-1 MS**  
**Matrix: Solid**  
**Analysis Batch: 170562**

**Client Sample ID: ECH-S-IRM1-I1(0-2 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 170394**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.5		13.0	13.1		mg/Kg	☼	89	75 - 125
Lead	2.6		13.0	14.3		mg/Kg	☼	90	75 - 125
Zinc	160		64.8	205	F	mg/Kg	☼	73	75 - 125

**Lab Sample ID: 500-52522-1 MS**  
**Matrix: Solid**  
**Analysis Batch: 170609**

**Client Sample ID: ECH-S-IRM1-I1(0-2 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 170394**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	0.17	J	6.48	5.95		mg/Kg	☼	89	75 - 125

**Lab Sample ID: 500-52522-1 MSD**  
**Matrix: Solid**  
**Analysis Batch: 170562**

**Client Sample ID: ECH-S-IRM1-I1(0-2 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 170394**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	1.5		12.3	13.0		mg/Kg	☼	93	75 - 125	1	20

TestAmerica Chicago

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52522-1

## Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: 500-52522-1 MSD

Matrix: Solid

Analysis Batch: 170562

Client Sample ID: ECH-S-IRM1-I1(0-2 ft bgs)

Prep Type: Total/NA

Prep Batch: 170394

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	%Rec.	RPD	
	Result	Qualifier		Result	Qualifier				Limits	RPD	Limit
Lead	2.6		12.3	13.9		mg/Kg	☼	92	75 - 125	3	20
Zinc	160		61.3	193	F	mg/Kg	☼	58	75 - 125	6	20

Lab Sample ID: 500-52522-1 MSD

Matrix: Solid

Analysis Batch: 170609

Client Sample ID: ECH-S-IRM1-I1(0-2 ft bgs)

Prep Type: Total/NA

Prep Batch: 170394

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	%Rec.	RPD	
	Result	Qualifier		Result	Qualifier				Limits	RPD	Limit
Cadmium	0.17	J	6.13	5.71		mg/Kg	☼	90	75 - 125	4	20

Lab Sample ID: 500-52522-1 DU

Matrix: Solid

Analysis Batch: 170562

Client Sample ID: ECH-S-IRM1-I1(0-2 ft bgs)

Prep Type: Total/NA

Prep Batch: 170394

Analyte	Sample	Sample	DU		Unit	D	RPD	RPD	
	Result	Qualifier	Result	Qualifier				Limit	Limit
Arsenic	1.5		1.74		mg/Kg	☼	12	20	
Lead	2.6		2.75		mg/Kg	☼	6	20	
Zinc	160		161		mg/Kg	☼	2	20	

Lab Sample ID: 500-52522-1 DU

Matrix: Solid

Analysis Batch: 170609

Client Sample ID: ECH-S-IRM1-I1(0-2 ft bgs)

Prep Type: Total/NA

Prep Batch: 170394

Analyte	Sample	Sample	DU		Unit	D	RPD	RPD	
	Result	Qualifier	Result	Qualifier				Limit	Limit
Cadmium	0.17	J	0.151	J	mg/Kg	☼	13	20	

# Lab Chronicle

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-52522-1

**Client Sample ID: ECH-S-IRM1-I1(0-2 ft bgs)**

**Lab Sample ID: 500-52522-1**

**Date Collected: 11/19/12 11:45**

**Matrix: Solid**

**Date Received: 11/19/12 15:45**

**Percent Solids: 72.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			170394	11/20/12 10:15	LAH	TAL CHI
Total/NA	Analysis	6010B		1	170562	11/21/12 08:05	TDS	TAL CHI
Total/NA	Analysis	6010B		1	170609	11/21/12 10:38	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	170391	11/20/12 10:35	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-I2(0-2 ft bgs)**

**Lab Sample ID: 500-52522-2**

**Date Collected: 11/19/12 12:00**

**Matrix: Solid**

**Date Received: 11/19/12 15:45**

**Percent Solids: 72.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			170394	11/20/12 10:15	LAH	TAL CHI
Total/NA	Analysis	6010B		1	170562	11/21/12 08:54	TDS	TAL CHI
Total/NA	Analysis	6010B		1	170609	11/21/12 11:06	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	170391	11/20/12 10:35	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-52522-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13



## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-52522-1

**Login Number: 52522**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Scott, Sherri L**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-52562-1  
Client Project/Site: IRM Sampling

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
11/26/2012 9:14:14 AM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

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*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52562-1

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**Job ID: 500-52562-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-52562-1**

**Comments**

No additional comments.

**Receipt**

The sample was received on 11/20/2012 3:50 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.0° C.

**Metals**

No analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52562-1

**Client Sample ID: ECH-S-IRM1-D18 (0-2 ft bgs)**

**Lab Sample ID: 500-52562-1**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	5.5		1.2	0.27	mg/Kg	1	☼	6010B	Total/NA
Cadmium	5.1		0.24	0.060	mg/Kg	1	☼	6010B	Total/NA
Lead	41		0.61	0.21	mg/Kg	1	☼	6010B	Total/NA
Zinc	330		2.4	0.84	mg/Kg	1	☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52562-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52562-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-52562-1	ECH-S-IRM1-D18 (0-2 ft bgs)	Solid	11/20/12 13:20	11/20/12 15:50

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-52562-1

**Client Sample ID: ECH-S-IRM1-D18 (0-2 ft bgs)**

**Lab Sample ID: 500-52562-1**

Date Collected: 11/20/12 13:20

Matrix: Solid

Date Received: 11/20/12 15:50

Percent Solids: 75.1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.5		1.2	0.27	mg/Kg	✱	11/21/12 07:40	11/23/12 12:06	1
Cadmium	5.1		0.24	0.060	mg/Kg	✱	11/21/12 07:40	11/23/12 12:06	1
Lead	41		0.61	0.21	mg/Kg	✱	11/21/12 07:40	11/23/12 12:06	1
Zinc	330		2.4	0.84	mg/Kg	✱	11/21/12 07:40	11/23/12 12:06	1



## Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52562-1

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52562-1

## Metals

### Prep Batch: 170519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52562-1	ECH-S-IRM1-D18 (0-2 ft bgs)	Total/NA	Solid	3050B	
LCS 500-170519/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-170519/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 170742

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52562-1	ECH-S-IRM1-D18 (0-2 ft bgs)	Total/NA	Solid	6010B	170519
LCS 500-170519/2-A	Lab Control Sample	Total/NA	Solid	6010B	170519
MB 500-170519/1-A	Method Blank	Total/NA	Solid	6010B	170519

## General Chemistry

### Analysis Batch: 170525

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52562-1	ECH-S-IRM1-D18 (0-2 ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52562-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-170519/1-A**  
**Matrix: Solid**  
**Analysis Batch: 170742**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 170519**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		11/21/12 07:40	11/23/12 10:15	1
Cadmium	ND		0.20	0.050	mg/Kg		11/21/12 07:40	11/23/12 10:15	1
Lead	ND		0.50	0.17	mg/Kg		11/21/12 07:40	11/23/12 10:15	1
Zinc	ND		2.0	0.69	mg/Kg		11/21/12 07:40	11/23/12 10:15	1

**Lab Sample ID: LCS 500-170519/2-A**  
**Matrix: Solid**  
**Analysis Batch: 170742**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 170519**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	8.97		mg/Kg		90	80 - 120
Cadmium	5.00	4.58		mg/Kg		92	80 - 120
Lead	10.0	9.37		mg/Kg		94	80 - 120
Zinc	50.0	45.7		mg/Kg		91	80 - 120

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52562-1

**Client Sample ID: ECH-S-IRM1-D18 (0-2 ft bgs)**

**Lab Sample ID: 500-52562-1**

**Date Collected: 11/20/12 13:20**

**Matrix: Solid**

**Date Received: 11/20/12 15:50**

**Percent Solids: 75.1**

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Prep	3050B			170519	11/21/12 07:40	LAH	TAL CHI
Total/NA	Analysis	6010B		1	170742	11/23/12 12:06	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	170525	11/21/12 08:13	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52562-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13



## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-52562-1

**Login Number: 52562**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Lunt, Jeff T**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	3.0
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-52870-1  
Client Project/Site: IRM Sampling

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
12/5/2012 12:04:21 PM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52870-1

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**Job ID: 500-52870-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-52870-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 12/3/2012 3:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.2° C.

**Metals**

No analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52870-1

## Client Sample ID: ECH-S-IRM1-G8 (4-4.5 ft bgs)

Lab Sample ID: 500-52870-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.5		1.8	0.38	mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.50		0.35	0.087	mg/Kg	1	☼	6010B	Total/NA
Lead	7.6		0.88	0.30	mg/Kg	1	☼	6010B	Total/NA
Zinc	120		3.5	1.2	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-G7 (4-4.5 ft bgs)

Lab Sample ID: 500-52870-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	5.6		1.6	0.35	mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.24	J	0.32	0.080	mg/Kg	1	☼	6010B	Total/NA
Lead	7.0		0.81	0.28	mg/Kg	1	☼	6010B	Total/NA
Zinc	450		3.2	1.1	mg/Kg	1	☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-HW-BFZ-43 (0-2 ft bgs)

Lab Sample ID: 500-52870-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	53		2.7	0.60	mg/Kg	1	☼	6010B	Total/NA
Cadmium	70		0.55	0.14	mg/Kg	1	☼	6010B	Total/NA
Lead	430		1.4	0.47	mg/Kg	1	☼	6010B	Total/NA
Zinc	15000		55	19	mg/Kg	10	☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52870-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52870-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-52870-1	ECH-S-IRM1-G8 (4-4.5 ft bgs)	Solid	12/03/12 08:30	12/03/12 15:40
500-52870-2	ECH-S-IRM1-G7 (4-4.5 ft bgs)	Solid	12/03/12 08:45	12/03/12 15:40
500-52870-3	ECH-S-IRM1-HW-BFZ-43 (0-2 ft bgs)	Solid	12/03/12 13:00	12/03/12 15:40

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52870-1

**Client Sample ID: ECH-S-IRM1-G8 (4-4.5 ft bgs)**

**Lab Sample ID: 500-52870-1**

**Date Collected: 12/03/12 08:30**

**Matrix: Solid**

**Date Received: 12/03/12 15:40**

**Percent Solids: 54.4**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.5		1.8	0.38	mg/Kg	✱	12/03/12 16:00	12/04/12 10:38	1
Cadmium	0.50		0.35	0.087	mg/Kg	✱	12/03/12 16:00	12/04/12 10:38	1
Lead	7.6		0.88	0.30	mg/Kg	✱	12/03/12 16:00	12/04/12 10:38	1
Zinc	120		3.5	1.2	mg/Kg	✱	12/03/12 16:00	12/04/12 10:38	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-52870-1

**Client Sample ID: ECH-S-IRM1-G7 (4-4.5 ft bgs)**

**Lab Sample ID: 500-52870-2**

Date Collected: 12/03/12 08:45

Matrix: Solid

Date Received: 12/03/12 15:40

Percent Solids: 55.7

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.6		1.6	0.35	mg/Kg	✱	12/03/12 16:00	12/04/12 10:42	1
Cadmium	0.24	J	0.32	0.080	mg/Kg	✱	12/03/12 16:00	12/04/12 10:42	1
Lead	7.0		0.81	0.28	mg/Kg	✱	12/03/12 16:00	12/04/12 10:42	1
Zinc	450		3.2	1.1	mg/Kg	✱	12/03/12 16:00	12/04/12 10:42	1



# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-52870-1

**Client Sample ID: ECH-S-IRM1-HW-BFZ-43 (0-2 ft bgs)**

**Lab Sample ID: 500-52870-3**

Date Collected: 12/03/12 13:00

Matrix: Solid

Date Received: 12/03/12 15:40

Percent Solids: 33.0

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	53		2.7	0.60	mg/Kg	✱	12/03/12 16:00	12/04/12 10:46	1
Cadmium	70		0.55	0.14	mg/Kg	✱	12/03/12 16:00	12/04/12 10:46	1
Lead	430		1.4	0.47	mg/Kg	✱	12/03/12 16:00	12/04/12 10:46	1
Zinc	15000		55	19	mg/Kg	✱	12/03/12 16:00	12/04/12 10:59	10



# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52870-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52870-1

## Metals

### Prep Batch: 171702

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52870-1	ECH-S-IRM1-G8 (4-4.5 ft bgs)	Total/NA	Solid	3050B	
500-52870-2	ECH-S-IRM1-G7 (4-4.5 ft bgs)	Total/NA	Solid	3050B	
500-52870-3	ECH-S-IRM1-HW-BFZ-43 (0-2 ft bgs)	Total/NA	Solid	3050B	
LCS 500-171702/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-171702/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 171788

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52870-1	ECH-S-IRM1-G8 (4-4.5 ft bgs)	Total/NA	Solid	6010B	171702
500-52870-2	ECH-S-IRM1-G7 (4-4.5 ft bgs)	Total/NA	Solid	6010B	171702
500-52870-3	ECH-S-IRM1-HW-BFZ-43 (0-2 ft bgs)	Total/NA	Solid	6010B	171702
500-52870-3	ECH-S-IRM1-HW-BFZ-43 (0-2 ft bgs)	Total/NA	Solid	6010B	171702
LCS 500-171702/2-A	Lab Control Sample	Total/NA	Solid	6010B	171702
MB 500-171702/1-A	Method Blank	Total/NA	Solid	6010B	171702

## General Chemistry

### Analysis Batch: 171734

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52870-1	ECH-S-IRM1-G8 (4-4.5 ft bgs)	Total/NA	Solid	Moisture	
500-52870-2	ECH-S-IRM1-G7 (4-4.5 ft bgs)	Total/NA	Solid	Moisture	
500-52870-3	ECH-S-IRM1-HW-BFZ-43 (0-2 ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52870-1

## Method: 6010B - Metals (ICP)

Lab Sample ID: MB 500-171702/1-A  
Matrix: Solid  
Analysis Batch: 171788

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 171702

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		12/03/12 16:00	12/04/12 09:52	1
Cadmium	ND		0.20	0.050	mg/Kg		12/03/12 16:00	12/04/12 09:52	1
Lead	ND		0.50	0.17	mg/Kg		12/03/12 16:00	12/04/12 09:52	1
Zinc	ND		2.0	0.69	mg/Kg		12/03/12 16:00	12/04/12 09:52	1

Lab Sample ID: LCS 500-171702/2-A  
Matrix: Solid  
Analysis Batch: 171788

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 171702

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.49		mg/Kg		95	80 - 120
Cadmium	5.00	4.89		mg/Kg		98	80 - 120
Lead	10.0	9.88		mg/Kg		99	80 - 120
Zinc	50.0	49.2		mg/Kg		98	80 - 120

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52870-1

## Client Sample ID: ECH-S-IRM1-G8 (4-4.5 ft bgs)

Lab Sample ID: 500-52870-1

Date Collected: 12/03/12 08:30

Matrix: Solid

Date Received: 12/03/12 15:40

Percent Solids: 54.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			171702	12/03/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	171788	12/04/12 10:38	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	171734	12/04/12 07:31	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-G7 (4-4.5 ft bgs)

Lab Sample ID: 500-52870-2

Date Collected: 12/03/12 08:45

Matrix: Solid

Date Received: 12/03/12 15:40

Percent Solids: 55.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			171702	12/03/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	171788	12/04/12 10:42	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	171734	12/04/12 07:31	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-HW-BFZ-43 (0-2 ft bgs)

Lab Sample ID: 500-52870-3

Date Collected: 12/03/12 13:00

Matrix: Solid

Date Received: 12/03/12 15:40

Percent Solids: 33.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			171702	12/03/12 16:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	171788	12/04/12 10:46	PJ	TAL CHI
Total/NA	Analysis	6010B		10	171788	12/04/12 10:59	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	171734	12/04/12 07:31	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-52870-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13

Chicago  
2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

### Chain of Custody Record

**TestAmerica**  
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact		Project Manager: Randy Palachek			Site Contact: Keith Thompson			Date: 12-3-2012			COC No: 500-52870		
Wanda Davis - URS Corp. ADQM		Tel/Fax: 512.719.6006			Lab Contact: Richard Wright			Carrier: TA Courier			X 1 of 21 COCs		
Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300		Analysis Turnaround Time			Filtered Sample Total Metals (As, Cd, Pb, Zn)						Job No.		
Newark, DE 19713		Calendar (C) or Work Days (W)											
(302) 781-5892		TAT if different from Below _____											
(302) 781-5901 Fax		<input type="checkbox"/> 2 weeks											
Project Name: IRM Sampling		<input type="checkbox"/> 1 week											
Site Location: DuPont East Chicago, Indiana		<input checked="" type="checkbox"/> 2 days									SDG No.		
PO#: LBIO-66421, Client Project#: 9267-7720100C-WHO6507754		<input type="checkbox"/> 1 day											
Sample Identification		Sample Date	Sample Time	Sample Type	Matrix	# of Cont.				Sample Specific Notes:			
1 ECH-S-IRM1-G8' (4-5F+bg)		12-3-2012	830	composit	S	1	X						
2 ECH-S-IRM1-G7' (4-5F+bg)		12-3-2012	845	composit	S	1	X						
3 ECH-S-IRM1-BF2-43(2-2.5F+bg)		12-3-2012	1300	composit	S	1	X						
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____		Possible Hazard Identification			Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)								
X Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/>					<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months								
Special Instructions/QC Requirements & Comments:													
Relinquished by: <i>[Signature]</i>		Company: Parsons		Date/Time: 1500 12-3-2012		Received by: <i>[Signature]</i>		Company: KSA		Date/Time: 12/3/12 1500			
Relinquished by: <i>[Signature]</i>		Company: TestAmerica		Date/Time: 12/3/12		Received by: <i>[Signature]</i>		Company: TA-CHI		Date/Time: 12/3/12 1540			
Relinquished by:		Company:		Date/Time:		Received by:		Company:		Date/Time:			

Chicago  
2417 Bond Street

University Park, IL 60406  
phone 708.534.5200 fax 708.534.5363

Chain of Custody Record

500-52870  
**TestAmerica**  
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact Wanda Davis - URS Corp. ADQM		Project Manager: Randy Palachek Tel/Fax: 512.719.6006		Site Contact: Keith Thompson Lab Contact: Richard Wright		Date: 12-3-2012 Carrier: TA Courier		COC No: X 1 of X COCs		
Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300 Newark, DE 19718 (302) 751-5592 (302) 751-5901 Fax Project Name: IRM Sampling Site Location: DuPont East Chicago, Indiana PO#: LA10-66421, Client Project#: 9267-7720100C-WHO6507764		Analysis Turnaround Time Calendar (C) or Work Days (W) TAT if different from Below _____ <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input checked="" type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Total Metals (As, Cd, Pb, Zn)						Job No.
										SDG No.
										Sample Specific Notes:
Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.					
ECH-S-IRM1-G8 <sup>GA</sup> (4-5ft bgs) <sup>12-4-2012</sup>	12-3-2012	930	Composite	S	1	X				
ECH-S-IRM1-G7 <sup>GA</sup> (4-3ft bgs)	12-3-2012	845	Composite	S	1	X				
ECH-S-IRM1 <sup>HW</sup> -BF2-43 (2-2.5ft bgs) <sup>0-2.5ft bgs</sup>	12-3-2012	1300	Composite	S	1	X				
GA 12-4-2012										
Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4= HNO3, 5= NaOH, 6= Other						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)				
Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown						<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months				
Special Instructions/QC Requirements & Comments:										
Released by:	Company:	Date/Time:	Received by:	Company:	Date/Time:					
	Parsons	12-3-2012 1500		TestAmerica	12-3-2012 1500					
Released by:	Company:	Date/Time:	Received by:	Company:	Date/Time:					
Released by:	Company:	Date/Time:	Received by:	Company:	Date/Time:					

## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-52870-1

**Login Number: 52870**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Scott, Sherri L**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-53085-1  
Client Project/Site: IRM Soil Sampling

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
12/11/2012 11:20:00 AM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Soil Sampling

TestAmerica Job ID: 500-53085-1

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**Job ID: 500-53085-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-53085-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 12/8/2012 7:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.4° C.

**Metals**

No analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Soil Sampling

TestAmerica Job ID: 500-53085-1

## Client Sample ID: ECH-S-IRM1-F17 (0-4 ft bgs)

Lab Sample ID: 500-53085-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	5.0		1.2	0.27	mg/Kg	1		☼	6010B	Total/NA
Cadmium	1.7		0.25	0.061	mg/Kg	1		☼	6010B	Total/NA
Lead	110	B	0.61	0.21	mg/Kg	1		☼	6010B	Total/NA
Zinc	380		2.5	0.84	mg/Kg	1		☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F15 (0-4 ft bgs)

Lab Sample ID: 500-53085-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	2.8		1.4	0.30	mg/Kg	1		☼	6010B	Total/NA
Cadmium	0.62		0.27	0.068	mg/Kg	1		☼	6010B	Total/NA
Lead	6.9	B	0.69	0.24	mg/Kg	1		☼	6010B	Total/NA
Zinc	1000		2.7	0.94	mg/Kg	1		☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Soil Sampling

TestAmerica Job ID: 500-53085-1

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Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

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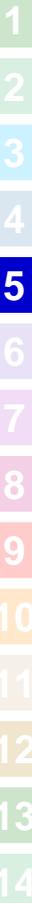
**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Sample Summary

Client: URS Corporation  
Project/Site: IRM Soil Sampling

TestAmerica Job ID: 500-53085-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-53085-1	ECH-S-IRM1-F17 (0-4 ft bgs)	Solid	12/05/12 11:00	12/08/12 07:00
500-53085-2	ECH-S-IRM1-F15 (0-4 ft bgs)	Solid	12/07/12 11:00	12/08/12 07:00

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Soil Sampling

TestAmerica Job ID: 500-53085-1

**Client Sample ID: ECH-S-IRM1-F17 (0-4 ft bgs)**

**Lab Sample ID: 500-53085-1**

Date Collected: 12/05/12 11:00

Matrix: Solid

Date Received: 12/08/12 07:00

Percent Solids: 69.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.0		1.2	0.27	mg/Kg	✱	12/10/12 09:40	12/11/12 00:58	1
Cadmium	1.7		0.25	0.061	mg/Kg	✱	12/10/12 09:40	12/11/12 00:58	1
Lead	110	B	0.61	0.21	mg/Kg	✱	12/10/12 09:40	12/11/12 00:58	1
Zinc	380		2.5	0.84	mg/Kg	✱	12/10/12 09:40	12/11/12 00:58	1



# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Soil Sampling

TestAmerica Job ID: 500-53085-1

**Client Sample ID: ECH-S-IRM1-F15 (0-4 ft bgs)**

**Lab Sample ID: 500-53085-2**

Date Collected: 12/07/12 11:00

Matrix: Solid

Date Received: 12/08/12 07:00

Percent Solids: 67.6

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.8		1.4	0.30	mg/Kg	✱	12/10/12 09:40	12/11/12 01:04	1
Cadmium	0.62		0.27	0.068	mg/Kg	✱	12/10/12 09:40	12/11/12 01:04	1
Lead	6.9	B	0.69	0.24	mg/Kg	✱	12/10/12 09:40	12/11/12 01:04	1
Zinc	1000		2.7	0.94	mg/Kg	✱	12/10/12 09:40	12/11/12 01:04	1



# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Soil Sampling

TestAmerica Job ID: 500-53085-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Soil Sampling

TestAmerica Job ID: 500-53085-1

## Metals

### Prep Batch: 172429

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-53085-1	ECH-S-IRM1-F17 (0-4 ft bgs)	Total/NA	Solid	3050B	
500-53085-2	ECH-S-IRM1-F15 (0-4 ft bgs)	Total/NA	Solid	3050B	
LCS 500-172429/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-172429/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 172536

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-53085-1	ECH-S-IRM1-F17 (0-4 ft bgs)	Total/NA	Solid	6010B	172429
500-53085-2	ECH-S-IRM1-F15 (0-4 ft bgs)	Total/NA	Solid	6010B	172429
LCS 500-172429/2-A	Lab Control Sample	Total/NA	Solid	6010B	172429
MB 500-172429/1-A	Method Blank	Total/NA	Solid	6010B	172429

## General Chemistry

### Analysis Batch: 172343

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-53085-1	ECH-S-IRM1-F17 (0-4 ft bgs)	Total/NA	Solid	Moisture	
500-53085-2	ECH-S-IRM1-F15 (0-4 ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
 Project/Site: IRM Soil Sampling

TestAmerica Job ID: 500-53085-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-172429/1-A**  
**Matrix: Solid**  
**Analysis Batch: 172536**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 172429**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		12/10/12 09:40	12/11/12 00:45	1
Cadmium	ND		0.20	0.050	mg/Kg		12/10/12 09:40	12/11/12 00:45	1
Lead	0.231	J	0.50	0.17	mg/Kg		12/10/12 09:40	12/11/12 00:45	1
Zinc	ND		2.0	0.69	mg/Kg		12/10/12 09:40	12/11/12 00:45	1

**Lab Sample ID: LCS 500-172429/2-A**  
**Matrix: Solid**  
**Analysis Batch: 172536**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 172429**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.13		mg/Kg		91	80 - 120
Cadmium	5.00	4.79		mg/Kg		96	80 - 120
Lead	10.0	10.1		mg/Kg		101	80 - 120
Zinc	50.0	47.8		mg/Kg		96	80 - 120

# Lab Chronicle

Client: URS Corporation  
 Project/Site: IRM Soil Sampling

TestAmerica Job ID: 500-53085-1

**Client Sample ID: ECH-S-IRM1-F17 (0-4 ft bgs)**

**Lab Sample ID: 500-53085-1**

Date Collected: 12/05/12 11:00

Matrix: Solid

Date Received: 12/08/12 07:00

Percent Solids: 69.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			172429	12/10/12 09:40	LAH	TAL CHI
Total/NA	Analysis	6010B		1	172536	12/11/12 00:58	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	172343	12/08/12 11:24	CMV	TAL CHI

**Client Sample ID: ECH-S-IRM1-F15 (0-4 ft bgs)**

**Lab Sample ID: 500-53085-2**

Date Collected: 12/07/12 11:00

Matrix: Solid

Date Received: 12/08/12 07:00

Percent Solids: 67.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			172429	12/10/12 09:40	LAH	TAL CHI
Total/NA	Analysis	6010B		1	172536	12/11/12 01:04	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	172343	12/08/12 11:24	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Certification Summary

Client: URS Corporation  
 Project/Site: IRM Soil Sampling

TestAmerica Job ID: 500-53085-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13



**Chicago**

2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

**Chain of Custody Record**



TestAmerica Laboratories, Inc.

<b>Client Contact</b> Wanda Davis - URS Corp. ADQM Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300 Newark, DE 19713 (302) 781-5892 (302) 781-5901 Fax Project Name: <del>CAC Soil Sampling 4/12</del> Site Location: DuPont East Chicago, Indiana PO#_LBI0-65636 Client Project#_9267-7720100C-WH0650794		<b>Project Manager: Randy Palachek</b> Tel/Fax: 512.719.6006		<b>Site Contact: Keith Thompson</b> Lab Contact: Richard Wright		<b>Date: 07 December 2012</b> Carrier: TA Courier		<b>COC No:</b> 1 of 1 COCs Job No. SDG No.	
<b>Analysis Turnaround Time</b> Calendar (C) or Work Days (W) TAT if different from Below 48-Hr TAT <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input checked="" type="checkbox"/> 2 days <input type="checkbox"/> 1 day									
<b>Sample Identification</b>	<b>Sample Date</b>	<b>Sample Time</b>	<b>Sample Type</b>	<b>Matrix</b>	<b># of Cont.</b>	<b>Filtered Sample</b> As, Pb, Cd, Zn			<b>Sample Specific Notes:</b>
ECH-S-IRM1-F17 (0-4 ft bgs)	12/5/2012	1100	Composite	SOIL	1	N X			
ECH-S-IRM1-F15 (0-4 ft bgs)	12/7/2012	1100	Composite	SOIL	1	N X			
<p style="font-size: 2em; font-family: cursive;">IRM SOIL SAMPLING</p>									
<b>Preservation Used:</b> 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other						<b>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</b> <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months			
<b>Possible Hazard Identification</b> <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown									
<b>Special Instructions/QC Requirements &amp; Comments:</b> 9267-7720100C - WH06507754									
Relinquished by: <i>N Dam</i>	Company: <i>Parsons</i>	Date/Time: <i>12-7-12/1200</i>	Received by: <i>Anthony</i>	Company: <i>TA</i>	Date/Time: <i>12-7-12 14:05</i>				
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:				
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:				

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## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-53085-1

**Login Number: 53085**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Lunt, Jeff T**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	1.4
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-53189-1  
Client Project/Site: IRM Sampling  
Revision: 1

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
12/18/2012 2:18:42 PM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53189-1

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**Job ID: 500-53189-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-53189-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 12/12/2012 4:20 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.8° C.

**Revision:** L2 Report and Envista Edd revised for sample ID changes per Parsons requested 12/18/12

**Metals**

No analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53189-1

## Client Sample ID: ECH-S-IRM1-F12 (0-4 ft bgs)

Lab Sample ID: 500-53189-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	7.5		1.1	0.23	mg/Kg	1		☼	6010B	Total/NA
Cadmium	41		0.21	0.053	mg/Kg	1		☼	6010B	Total/NA
Lead	520		0.53	0.18	mg/Kg	1		☼	6010B	Total/NA
Zinc	3100		11	3.6	mg/Kg	5		☼	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F14 (0-4 ft bgs)

Lab Sample ID: 500-53189-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	21		0.97	0.21	mg/Kg	1		☼	6010B	Total/NA
Cadmium	84		0.19	0.048	mg/Kg	1		☼	6010B	Total/NA
Lead	2100		0.49	0.17	mg/Kg	1		☼	6010B	Total/NA
Zinc	4600		19	6.7	mg/Kg	10		☼	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53189-1

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Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

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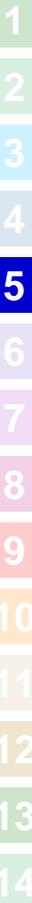
**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53189-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-53189-1	ECH-S-IRM1-F12 (0-4 ft bgs)	Solid	12/12/12 09:30	12/12/12 16:20
500-53189-2	ECH-S-IRM1-F14 (0-4 ft bgs)	Solid	12/12/12 09:40	12/12/12 16:20

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-53189-1

**Client Sample ID: ECH-S-IRM1-F12 (0-4 ft bgs)**

**Lab Sample ID: 500-53189-1**

Date Collected: 12/12/12 09:30

Matrix: Solid

Date Received: 12/12/12 16:20

Percent Solids: 92.9

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	7.5		1.1	0.23	mg/Kg	☆	12/13/12 07:00	12/13/12 13:26	1
Cadmium	41		0.21	0.053	mg/Kg	☆	12/13/12 07:00	12/13/12 13:26	1
Lead	520		0.53	0.18	mg/Kg	☆	12/13/12 07:00	12/13/12 13:26	1
Zinc	3100		11	3.6	mg/Kg	☆	12/13/12 07:00	12/13/12 13:33	5



# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53189-1

**Client Sample ID: ECH-S-IRM1-F14 (0-4 ft bgs)**

**Lab Sample ID: 500-53189-2**

**Date Collected: 12/12/12 09:40**

**Matrix: Solid**

**Date Received: 12/12/12 16:20**

**Percent Solids: 90.4**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	21		0.97	0.21	mg/Kg	✱	12/13/12 07:00	12/13/12 13:39	1
Cadmium	84		0.19	0.048	mg/Kg	✱	12/13/12 07:00	12/13/12 13:39	1
Lead	2100		0.49	0.17	mg/Kg	✱	12/13/12 07:00	12/13/12 13:39	1
Zinc	4600		19	6.7	mg/Kg	✱	12/13/12 07:00	12/13/12 14:44	10

## Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53189-1

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53189-1

## Metals

### Prep Batch: 172833

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-53189-1	ECH-S-IRM1-F12 (0-4 ft bgs)	Total/NA	Solid	3050B	
500-53189-2	ECH-S-IRM1-F14 (0-4 ft bgs)	Total/NA	Solid	3050B	
LCS 500-172833/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-172833/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 172918

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-53189-1	ECH-S-IRM1-F12 (0-4 ft bgs)	Total/NA	Solid	6010B	172833
500-53189-1	ECH-S-IRM1-F12 (0-4 ft bgs)	Total/NA	Solid	6010B	172833
500-53189-2	ECH-S-IRM1-F14 (0-4 ft bgs)	Total/NA	Solid	6010B	172833
500-53189-2	ECH-S-IRM1-F14 (0-4 ft bgs)	Total/NA	Solid	6010B	172833
LCS 500-172833/2-A	Lab Control Sample	Total/NA	Solid	6010B	172833
MB 500-172833/1-A	Method Blank	Total/NA	Solid	6010B	172833

## General Chemistry

### Analysis Batch: 172834

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-53189-1	ECH-S-IRM1-F12 (0-4 ft bgs)	Total/NA	Solid	Moisture	
500-53189-1 DU	ECH-S-IRM1-F12 (0-4 ft bgs)	Total/NA	Solid	Moisture	
500-53189-2	ECH-S-IRM1-F14 (0-4 ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53189-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-172833/1-A**  
**Matrix: Solid**  
**Analysis Batch: 172918**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 172833**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		12/13/12 07:00	12/13/12 13:14	1
Cadmium	ND		0.20	0.050	mg/Kg		12/13/12 07:00	12/13/12 13:14	1
Lead	ND		0.50	0.17	mg/Kg		12/13/12 07:00	12/13/12 13:14	1
Zinc	ND		2.0	0.69	mg/Kg		12/13/12 07:00	12/13/12 13:14	1

**Lab Sample ID: LCS 500-172833/2-A**  
**Matrix: Solid**  
**Analysis Batch: 172918**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 172833**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.62		mg/Kg		96	80 - 120
Cadmium	5.00	4.98		mg/Kg		100	80 - 120
Lead	10.0	10.2		mg/Kg		102	80 - 120
Zinc	50.0	50.1		mg/Kg		100	80 - 120

# Lab Chronicle

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-53189-1

## Client Sample ID: ECH-S-IRM1-F12 (0-4 ft bgs)

Lab Sample ID: 500-53189-1

Date Collected: 12/12/12 09:30

Matrix: Solid

Date Received: 12/12/12 16:20

Percent Solids: 92.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			172833	12/13/12 07:00	LAH	TAL CHI
Total/NA	Analysis	6010B		1	172918	12/13/12 13:26	TDS	TAL CHI
Total/NA	Analysis	6010B		5	172918	12/13/12 13:33	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	172834	12/13/12 08:03	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-F14 (0-4 ft bgs)

Lab Sample ID: 500-53189-2

Date Collected: 12/12/12 09:40

Matrix: Solid

Date Received: 12/12/12 16:20

Percent Solids: 90.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			172833	12/13/12 07:00	LAH	TAL CHI
Total/NA	Analysis	6010B		1	172918	12/13/12 13:39	TDS	TAL CHI
Total/NA	Analysis	6010B		10	172918	12/13/12 14:44	TDS	TAL CHI
Total/NA	Analysis	Moisture		1	172834	12/13/12 08:03	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-53189-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13







## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-53189-1

**Login Number: 53189**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Scott, Sherri L**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.8
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-53238-1  
Client Project/Site: IRM Sampling  
Revision: 1

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
12/18/2012 2:19:20 PM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53238-1

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**Job ID: 500-53238-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative  
500-53238-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 12/13/2012 3:37 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.6° C.

**Revision:** L2 Report and Envista Edd revised for sample ID changes per Parsons requested 12/18/12

**Metals**

Method(s) 6010B: The matrix duplicate %RPD for sample 500-53238-1 was outside the control limits for Pb.

Method(s) 6010B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for sample 500-53238-1 were outside control limits for Pb. The associated laboratory control sample (LCS) recovery met acceptance criteria, therefore the data has been reported.

No other analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53238-1

## Client Sample ID: ECH-S-IRM1-F7 (0-4 ft bgs)

Lab Sample ID: 500-53238-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	1.0		1.0	0.22	mg/Kg	1		*	6010B	Total/NA
Cadmium	0.47		0.20	0.051	mg/Kg	1		*	6010B	Total/NA
Lead	25	B	0.51	0.18	mg/Kg	1		*	6010B	Total/NA
Zinc	47		2.0	0.70	mg/Kg	1		*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F10 (0-4 ft bgs)

Lab Sample ID: 500-53238-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	0.85	J	1.2	0.25	mg/Kg	1		*	6010B	Total/NA
Cadmium	58		0.23	0.058	mg/Kg	1		*	6010B	Total/NA
Lead	38	B	0.58	0.20	mg/Kg	1		*	6010B	Total/NA
Zinc	350		2.3	0.80	mg/Kg	1		*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F4 (0-4 ft bgs)

Lab Sample ID: 500-53238-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	6.7		1.0	0.23	mg/Kg	1		*	6010B	Total/NA
Cadmium	1.0		0.21	0.051	mg/Kg	1		*	6010B	Total/NA
Lead	97	B	0.52	0.18	mg/Kg	1		*	6010B	Total/NA
Zinc	120		2.1	0.71	mg/Kg	1		*	6010B	Total/NA

## Client Sample ID: ECH-S-IRM1-F5 (4-4.5 ft bgs)

Lab Sample ID: 500-53238-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Arsenic	6.0		1.5	0.32	mg/Kg	1		*	6010B	Total/NA
Cadmium	7.0		0.30	0.073	mg/Kg	1		*	6010B	Total/NA
Lead	48	B	0.74	0.25	mg/Kg	1		*	6010B	Total/NA
Zinc	430		3.0	1.0	mg/Kg	1		*	6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53238-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

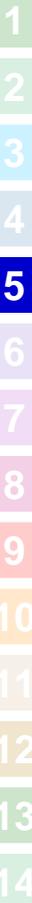
**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53238-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-53238-1	ECH-S-IRM1-F7 (0-4 ft bgs)	Solid	12/13/12 09:40	12/13/12 15:37
500-53238-2	ECH-S-IRM1-F10 (0-4 ft bgs)	Solid	12/13/12 09:50	12/13/12 15:37
500-53238-3	ECH-S-IRM1-F4 (0-4 ft bgs)	Solid	12/13/12 14:30	12/13/12 15:37
500-53238-4	ECH-S-IRM1-F5 (4-4.5 ft bgs)	Solid	12/13/12 14:40	12/13/12 15:37

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-53238-1

**Client Sample ID: ECH-S-IRM1-F7 (0-4 ft bgs)**

**Lab Sample ID: 500-53238-1**

**Date Collected: 12/13/12 09:40**

**Matrix: Solid**

**Date Received: 12/13/12 15:37**

**Percent Solids: 90.4**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.0		1.0	0.22	mg/Kg	✱	12/14/12 07:35	12/14/12 15:59	1
Cadmium	0.47		0.20	0.051	mg/Kg	✱	12/14/12 07:35	12/14/12 15:59	1
Lead	25	B	0.51	0.18	mg/Kg	✱	12/14/12 07:35	12/14/12 15:59	1
Zinc	47		2.0	0.70	mg/Kg	✱	12/14/12 07:35	12/14/12 15:59	1

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# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-53238-1

**Client Sample ID: ECH-S-IRM1-F10 (0-4 ft bgs)**

**Lab Sample ID: 500-53238-2**

**Date Collected: 12/13/12 09:50**

**Matrix: Solid**

**Date Received: 12/13/12 15:37**

**Percent Solids: 78.9**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.85	J	1.2	0.25	mg/Kg	✱	12/14/12 07:35	12/14/12 16:30	1
Cadmium	58		0.23	0.058	mg/Kg	✱	12/14/12 07:35	12/14/12 16:30	1
Lead	38	B	0.58	0.20	mg/Kg	✱	12/14/12 07:35	12/14/12 16:30	1
Zinc	350		2.3	0.80	mg/Kg	✱	12/14/12 07:35	12/14/12 16:30	1



# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53238-1

**Client Sample ID: ECH-S-IRM1-F4 (0-4 ft bgs)**

**Lab Sample ID: 500-53238-3**

**Date Collected: 12/13/12 14:30**

**Matrix: Solid**

**Date Received: 12/13/12 15:37**

**Percent Solids: 95.5**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.7		1.0	0.23	mg/Kg	✱	12/14/12 07:35	12/14/12 16:36	1
Cadmium	1.0		0.21	0.051	mg/Kg	✱	12/14/12 07:35	12/14/12 16:36	1
Lead	97	B	0.52	0.18	mg/Kg	✱	12/14/12 07:35	12/14/12 16:36	1
Zinc	120		2.1	0.71	mg/Kg	✱	12/14/12 07:35	12/14/12 16:36	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-53238-1

**Client Sample ID: ECH-S-IRM1-F5 (4-4.5 ft bgs)**

**Lab Sample ID: 500-53238-4**

Date Collected: 12/13/12 14:40

Matrix: Solid

Date Received: 12/13/12 15:37

Percent Solids: 65.4

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.0		1.5	0.32	mg/Kg	✱	12/14/12 07:35	12/14/12 16:42	1
Cadmium	7.0		0.30	0.073	mg/Kg	✱	12/14/12 07:35	12/14/12 16:42	1
Lead	48	B	0.74	0.25	mg/Kg	✱	12/14/12 07:35	12/14/12 16:42	1
Zinc	430		3.0	1.0	mg/Kg	✱	12/14/12 07:35	12/14/12 16:42	1



# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53238-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F	Duplicate RPD exceeds the control limit
F	MS or MSD exceeds the control limits

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53238-1

## Metals

### Prep Batch: 172966

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-53238-1	ECH-S-IRM1-F7 (0-4 ft bgs)	Total/NA	Solid	3050B	
500-53238-1 DU	ECH-S-IRM1-F7 (0-4 ft bgs)	Total/NA	Solid	3050B	
500-53238-1 MS	ECH-S-IRM1-F7 (0-4 ft bgs)	Total/NA	Solid	3050B	
500-53238-1 MSD	ECH-S-IRM1-F7 (0-4 ft bgs)	Total/NA	Solid	3050B	
500-53238-2	ECH-S-IRM1-F10 (0-4 ft bgs)	Total/NA	Solid	3050B	
500-53238-3	ECH-S-IRM1-F4 (0-4 ft bgs)	Total/NA	Solid	3050B	
500-53238-4	ECH-S-IRM1-F5 (4-4.5 ft bgs)	Total/NA	Solid	3050B	
LCS 500-172966/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-172966/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 173158

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-53238-1	ECH-S-IRM1-F7 (0-4 ft bgs)	Total/NA	Solid	6010B	172966
500-53238-1 DU	ECH-S-IRM1-F7 (0-4 ft bgs)	Total/NA	Solid	6010B	172966
500-53238-1 MS	ECH-S-IRM1-F7 (0-4 ft bgs)	Total/NA	Solid	6010B	172966
500-53238-1 MSD	ECH-S-IRM1-F7 (0-4 ft bgs)	Total/NA	Solid	6010B	172966
500-53238-2	ECH-S-IRM1-F10 (0-4 ft bgs)	Total/NA	Solid	6010B	172966
500-53238-3	ECH-S-IRM1-F4 (0-4 ft bgs)	Total/NA	Solid	6010B	172966
500-53238-4	ECH-S-IRM1-F5 (4-4.5 ft bgs)	Total/NA	Solid	6010B	172966
LCS 500-172966/2-A	Lab Control Sample	Total/NA	Solid	6010B	172966
MB 500-172966/1-A	Method Blank	Total/NA	Solid	6010B	172966

## General Chemistry

### Analysis Batch: 172959

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-53238-1	ECH-S-IRM1-F7 (0-4 ft bgs)	Total/NA	Solid	Moisture	
500-53238-1 DU	ECH-S-IRM1-F7 (0-4 ft bgs)	Total/NA	Solid	Moisture	
500-53238-2	ECH-S-IRM1-F10 (0-4 ft bgs)	Total/NA	Solid	Moisture	
500-53238-3	ECH-S-IRM1-F4 (0-4 ft bgs)	Total/NA	Solid	Moisture	
500-53238-4	ECH-S-IRM1-F5 (4-4.5 ft bgs)	Total/NA	Solid	Moisture	

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53238-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-172966/1-A**  
**Matrix: Solid**  
**Analysis Batch: 173158**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 172966**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.22	mg/Kg		12/14/12 07:35	12/14/12 15:46	1
Cadmium	ND		0.20	0.050	mg/Kg		12/14/12 07:35	12/14/12 15:46	1
Lead	0.212	J	0.50	0.17	mg/Kg		12/14/12 07:35	12/14/12 15:46	1
Zinc	ND		2.0	0.69	mg/Kg		12/14/12 07:35	12/14/12 15:46	1

**Lab Sample ID: LCS 500-172966/2-A**  
**Matrix: Solid**  
**Analysis Batch: 173158**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 172966**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.23		mg/Kg		92	80 - 120
Cadmium	5.00	4.74		mg/Kg		95	80 - 120
Lead	10.0	9.98		mg/Kg		100	80 - 120
Zinc	50.0	47.1		mg/Kg		94	80 - 120

**Lab Sample ID: 500-53238-1 MS**  
**Matrix: Solid**  
**Analysis Batch: 173158**

**Client Sample ID: ECH-S-IRM1-F7 (0-4 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 172966**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.0		10.9	11.3		mg/Kg	☼	94	75 - 125
Cadmium	0.47		5.47	5.70		mg/Kg	☼	95	75 - 125
Lead	25	B	10.9	22.7	F	mg/Kg	☼	-22	75 - 125
Zinc	47		54.7	110		mg/Kg	☼	115	75 - 125

**Lab Sample ID: 500-53238-1 MSD**  
**Matrix: Solid**  
**Analysis Batch: 173158**

**Client Sample ID: ECH-S-IRM1-F7 (0-4 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 172966**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	1.0		11.0	11.0		mg/Kg	☼	91	75 - 125	2	20
Cadmium	0.47		5.49	5.61		mg/Kg	☼	94	75 - 125	2	20
Lead	25	B	11.0	23.5	F	mg/Kg	☼	-15	75 - 125	3	20
Zinc	47		54.9	104		mg/Kg	☼	103	75 - 125	6	20

**Lab Sample ID: 500-53238-1 DU**  
**Matrix: Solid**  
**Analysis Batch: 173158**

**Client Sample ID: ECH-S-IRM1-F7 (0-4 ft bgs)**  
**Prep Type: Total/NA**  
**Prep Batch: 172966**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	1.0		0.500	J	mg/Kg	☼	70	20
Cadmium	0.47		0.436		mg/Kg	☼	8	20
Lead	25	B	12.7	F	mg/Kg	☼	65	20
Zinc	47		49.8		mg/Kg	☼	5	20

TestAmerica Chicago

# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53238-1

## Client Sample ID: ECH-S-IRM1-F7 (0-4 ft bgs)

Lab Sample ID: 500-53238-1

Date Collected: 12/13/12 09:40

Matrix: Solid

Date Received: 12/13/12 15:37

Percent Solids: 90.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			172966	12/14/12 07:35	LAH	TAL CHI
Total/NA	Analysis	6010B		1	173158	12/14/12 15:59	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	172959	12/14/12 08:11	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-F10 (0-4 ft bgs)

Lab Sample ID: 500-53238-2

Date Collected: 12/13/12 09:50

Matrix: Solid

Date Received: 12/13/12 15:37

Percent Solids: 78.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			172966	12/14/12 07:35	LAH	TAL CHI
Total/NA	Analysis	6010B		1	173158	12/14/12 16:30	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	172959	12/14/12 08:11	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-F4 (0-4 ft bgs)

Lab Sample ID: 500-53238-3

Date Collected: 12/13/12 14:30

Matrix: Solid

Date Received: 12/13/12 15:37

Percent Solids: 95.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			172966	12/14/12 07:35	LAH	TAL CHI
Total/NA	Analysis	6010B		1	173158	12/14/12 16:36	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	172959	12/14/12 08:11	CMV	TAL CHI

## Client Sample ID: ECH-S-IRM1-F5 (4-4.5 ft bgs)

Lab Sample ID: 500-53238-4

Date Collected: 12/13/12 14:40

Matrix: Solid

Date Received: 12/13/12 15:37

Percent Solids: 65.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			172966	12/14/12 07:35	LAH	TAL CHI
Total/NA	Analysis	6010B		1	173158	12/14/12 16:42	PJ	TAL CHI
Total/NA	Analysis	Moisture		1	172959	12/14/12 08:11	CMV	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-53238-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13





## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-53238-1

**Login Number: 53238**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Lunt, Jeff T**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	3.6
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

**APPENDIX G  
LABORATORY ANALYTICAL REPORTS  
AIR SAMPLING**





October 19, 2012

Wanda Davis  
E.I. DUPONT DE NEMOURS & CO., INC.  
URS - Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, DE 19713

Bureau Veritas Work Order No. 12100823

Reference: East Chicago, IN-IRM PROJECT/AIR FILTER SAMPLING

Dear Wanda Davis:

Bureau Veritas North America, Inc. received 2 samples on October 12, 2012 for the analyses presented in the following report.

Enclosed is a copy of the Chain-of-Custody record, acknowledging receipt of these samples. Please note that any unused portion of the samples will be discarded 30 days after the date of this report, unless you have requested otherwise.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Karen Coonan

Client Services Representative

Electronic signature authorized through password protection

**Bureau Veritas North America, Inc.**

*Health, Safety, and Environmental Services*

22345 Roethel Drive

Novi, MI 48375

Main: (248) 344.1770

Fax: (248) 344.2655

[www.us.bureauveritas.com](http://www.us.bureauveritas.com)



## CASE NARRATIVE

Date: 19-Oct-12

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**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Project:** East Chicago, IN-IRM PROJECT/AIR FILTER SAMPLING  
**Work Order No** 12100823

---

The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.

Analytical Comments for Method PM10\_ME, sample -002A: Actual value of the particulate blank was 20ug; the results have not been blank corrected.

Analytical Comments for Method EPA\_IO35, sample LCSD: The Laboratory Control Spike Duplicate (LCSD) recovered at 77.75%. Samples have not been recovery corrected.

Analytical Comments for Method EPA\_IO35, sample LCS: The Laboratory Control Spike (LCS) recovered at 73.05%. Samples have not been recovery corrected.



# ANALYTICAL RESULTS

Date: 10/19/2012

Client: E.I. DUPONT DE NEMOURS & CO., INC.

COC No.:

Work Order No: 12100823

Sample Identification ECH-A-090712-5

Lab Number: 001A

Date Collected: 10/10/2012

Sample Type: Quartz Filter

Date Received: 10/12/2012

Air Volume (L): 8835

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 10/19/2012

Analyst: Sud, R.

Batch ID: 52779

### Mass Results

### Air Concentration Results

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic	0.1111		0.016	0.09000	µg/Filter	0.01257		0.001811	0.01019	µg/m3
Cadmium	0.08870	J	0.0014	0.2000	µg/Filter	0.01004	J	0.0001585	0.02264	µg/m3
Lead	9.787		0.0060	1.000	µg/Filter	1.108		0.0006791	0.1132	µg/m3

Sample Identification ECH-A-090712-6 FIELD BLANK

Lab Number: 002A

Date Collected: 10/11/2012

Sample Type: Quartz Filter

Date Received: 10/12/2012

Air Volume (L): NA

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 10/19/2012

Analyst: Sud, R.

Batch ID: 52779

### Mass Results

### Air Concentration Results

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic		U	0.016	0.09000	µg/Filter		U	0.016	0.09	µg/Filter
Cadmium		U	0.0014	0.2000	µg/Filter		U	0.001	0.2	µg/Filter
Lead	0.1154	J	0.0060	1.000	µg/Filter	0.1154	J	0.006	1	µg/Filter

Qualifiers: U - Not Detected at the MDL

B - Analyte detected in the associated Media Blank

J-Value is between the MDL and RL, estimated result

NA - Not Applicable



## ANALYTICAL RESULTS

Date: 19-Oct-12

---

**Client:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Project:** East Chicago, IN-IRM PROJECT/AIR FILTER SAMPLING  
**Sample Type:** Quartz Filter **Work Order No:** 12100823  
**Method Reference:** 40CFR50 Appendix J (Mod) **Date Received:** 10/12/2012  
**RL ( $\mu\text{g}$ ):** 100 **Analyst:** DDN

---

Lab No.	Sample Identification	Air Volume (liters)	PM10 Particulate Matter		Date Analyzed
			( $\mu\text{g}$ )	( $\text{ug}/\text{m}^3$ )	
001A	ECH-A-090712-5 10/10/12	8835	490	55	10/16/2012
002A	ECH-A-090712-6 FIELD BLANK 10/11/12	0	<100	--	10/16/2012

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**General Notes:**

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.

Back sections (if applicable) were checked and showed no significant breakthrough unless otherwise noted



BUREAU  
VERITAS

Bureau Veritas North America, Inc.

Date: 19-Oct-12

**QC SUMMARY REPORT**  
Method Blank

CLIENT: E.I. DUPONT DE NEMOURS & CO., INC.

Work Order: 12100823

Project: East Chicago, IN-IRM PROJECT/AIR FILTER

Sample ID: MB-52779 Batch ID: 52779 Units: µg/Filter Analysis Date: 10/19/2012 Prep Date: 10/18/2012  
Client ID: Run ID: ME\_VA2B\_121019A SeqNo: 3221564

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	ND	1.0									
Cadmium	ND	1.0									
Lead	ND	1.0									

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank  
J - Analyte detected below Reporting Limit R - RPD outside accepted recovery limits



BUREAU  
VERITAS

Bureau Veritas North America, Inc.

Date: 19-Oct-12

**QC SUMMARY REPORT**  
Laboratory Control Spike

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12100823  
**Project:** East Chicago, IN-IRM PROJECT/AIR FILTER

Sample ID: LCS-52779      Batch ID: 52779      Units: µg/Filter      Run ID: ME\_VA2B\_121019A      Analysis Date: 10/19/2012      Prep Date: 10/18/2012  
Client ID:      SeqNo: 3221565

Analyte	Result 1	PQL	Spike Added	Unspiked		%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
				Sample Result	Sample Result							
Arsenic	1.461	1.0	2	0	0	73.1	80	120				S
Cadmium	1.976	1.0	2	0	0	98.8	80	120				
Lead	2.066	1.0	2	0	0	103	80	120				

LCS recovered at 73.05%. Samples have not been recovery corrected.

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits



BUREAU  
VERITAS

Bureau Veritas North America, Inc.

Date: 19-Oct-12

**QC SUMMARY REPORT**  
Laboratory Control Spike Duplicate

CLIENT: E.I. DUPONT DE NEMOURS & CO., INC.

Work Order: 12100823

Project: East Chicago, IN-IRM PROJECT/AIR FILTER

Sample ID: LCSD Batch ID: 52779 Units: µg/Filter Analysis Date: 10/19/2012 Prep Date: 10/18/2012  
Client ID: Run ID: ME\_VA2B\_121019A SeqNo: 3221568

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.555	1.0	2	0	77.8	80	120	1.461	6.23	20	S
Cadmium	2.104	1.0	2	0	105	80	120	1.976	6.26	20	
Lead	2.134	1.0	2	0	107	80	120	2.066	3.23	20	

LCS recovered at 77.75%. Samples have not been recovery corrected.

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank  
J - Analyte detected below Reporting Limit R - RPD outside accepted recovery limits





October 25, 2012

Wanda Davis  
E.I. DUPONT DE NEMOURS & CO., INC.  
URS - Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, DE 19713

Bureau Veritas Work Order No. 12101159

Reference: East Chicago, IN-IRM PROJECT/AIR FILTER SAMPLING

Dear Wanda Davis:

Bureau Veritas North America, Inc. received 2 samples on October 18, 2012 for the analyses presented in the following report.

Enclosed is a copy of the Chain-of-Custody record, acknowledging receipt of these samples. Please note that any unused portion of the samples will be discarded 30 days after the date of this report, unless you have requested otherwise.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Karen Coonan

Client Services Representative

Electronic signature authorized through password protection

**Bureau Veritas North America, Inc.**

*Health, Safety, and Environmental Services*

22345 Roethel Drive

Novi, MI 48375

Main: (248) 344.1770

Fax: (248) 344.2655

[www.us.bureauveritas.com](http://www.us.bureauveritas.com)



## CASE NARRATIVE

Date: 25-Oct-12

---

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Project:** East Chicago, IN-IRM PROJECT/AIR FILTER SAMPLING  
**Work Order No** 12101159

---

The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.

Analytical Comments for Method PM10\_ME, sample -001A: The results have not been blank corrected. Please note that a field blank should be submitted with each sample set.

Analytical Comments for Method EPA\_IO35, sample LCS: The Laboratory Control Spike (LCS) recovered at 78.69% for arsenic. Samples have not been recovery corrected.



# ANALYTICAL RESULTS

Date: 10/25/2012

Client: E.I. DUPONT DE NEMOURS & CO., INC.

COC No.:

Work Order No: 12101159

Sample Identification ECH-A-090712-7

Lab Number: 001A

Date Collected: 10/16/2012

Sample Type: Quartz Filter

Date Received: 10/18/2012

Air Volume (L): 8240

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 10/24/2012

Analyst: Sud, R.

Batch ID: 52815

### Mass Results

### Air Concentration Results

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic	0.04660	J	0.016	0.09000	µg/Filter	0.005655	J	0.001942	0.01092	µg/m3
Cadmium	0.006500	J	0.0014	0.2000	µg/Filter	0.0007888	J	0.0001699	0.02427	µg/m3
Lead	2.589		0.0060	1.000	µg/Filter	0.3142		0.0007282	0.1214	µg/m3

Sample Identification ECH-A-090712-8

Lab Number: 002A

Date Collected: 10/17/2012

Sample Type: Quartz Filter

Date Received: 10/18/2012

Air Volume (L): 7270

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 10/24/2012

Analyst: Sud, R.

Batch ID: 52815

### Mass Results

### Air Concentration Results

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic		U	0.016	0.09000	µg/Filter		U	0.002201	0.01238	µg/m3
Cadmium	0.03310	J	0.0014	0.2000	µg/Filter	0.004553	J	0.0001926	0.02751	µg/m3
Lead	1.338		0.0060	1.000	µg/Filter	0.1840		0.0008253	0.1376	µg/m3

Qualifiers: U - Not Detected at the MDL

B - Analyte detected in the associated Media Blank

J-Value is between the MDL and RL, estimated result

NA - Not Applicable



## ANALYTICAL RESULTS

Date: 25-Oct-12

---

**Client:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Project:** East Chicago, IN-IRM PROJECT/AIR FILTER SAMPLING  
**Sample Type:** Quartz Filter **Work Order No:** 12101159  
**Method Reference:** 40CFR50 Appendix J (Mod) **Date Received:** 10/18/2012  
**RL ( $\mu\text{g}$ ):** 100 **Analyst:** DDN

---

Lab No.	Sample Identification	Air Volume (liters)	PM10 Particulate Matter		
			( $\mu\text{g}$ )	( $\text{ug}/\text{m}^3$ )	Date Analyzed
001A	ECH-A-090712-7 10/16/12	8240	430,000	52,000	10/22/2012
002A	ECH-A-090712-8 10/17/12	7270	270,000	37,000	10/22/2012

---

General Notes:

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.

Back sections (if applicable) were checked and showed no significant breakthrough unless otherwise noted



BUREAU  
VERITAS

Bureau Veritas North America, Inc.

Date: 25-Oct-12

# QC SUMMARY REPORT

Method Blank

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12101159  
**Project:** East Chicago, IN-IRM PROJECT/AIR FILTER

**Sample ID:** MB-52815      **Batch ID:** 52815      **Units:** µg/Filter      **Analysis Date:** 10/24/2012      **Prep Date:** 10/23/2012  
**Client ID:**      **Run ID:** ME\_VA2B\_121024A      **SeqNo:** 3226894

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	ND	1.0									
Cadmium	ND	1.0									
Lead	ND	1.0									

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits



BUREAU  
VERITAS

Bureau Veritas North America, Inc.

Date: 25-Oct-12

# QC SUMMARY REPORT

Laboratory Control Spike

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12101159  
**Project:** East Chicago, IN-IRM PROJECT/AIR FILTER

Sample ID: LCS-52815      Batch ID: 52815      Units: µg/Filter      Analysis Date: 10/24/2012      Prep Date: 10/23/2012  
Client ID:      Run ID: ME\_VA2B\_121024A      SeqNo: 3226895

Analyte	Result 1	PQL	Spike Added	Unspiked		%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
				Sample Result	Sample Result							
Arsenic	1.574	1.0	2	0	0	78.7	80	120				S
Cadmium	1.964	1.0	2	0	0	98.2	80	120				
Lead	2	1.0	2	0	0	100	80	120				

LCS for arsenic recovered at 78.69%. Samples have not been recovery corrected.

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits



BUREAU  
VERITAS

Bureau Veritas North America, Inc.

Date: 25-Oct-12

**QC SUMMARY REPORT**  
Laboratory Control Spike Duplicate

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12101159  
**Project:** East Chicago, IN-IRM PROJECT/AIR FILTER

**Sample ID:** LCSD      **Batch ID:** 52815      **Units:** µg/Filter      **Analysis Date:** 10/24/2012      **Prep Date:** 10/23/2012  
**Client ID:**      **Run ID:** ME\_VA2B\_121024A      **SeqNo:** 3226898

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.602	1.0	2	0	80.1	80	120	1.574	1.79	20	
Cadmium	1.986	1.0	2	0	99.3	80	120	1.964	1.1	20	
Lead	2.04	1.0	2	0	102	80	120	2	1.96	20	

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits



### PM Sampling - Field Data Log

Project: DuPont  
 Sampling Date: 10/16/17 Page 1 of 1  
 Start - AtmPres[mmHg]: 29.10 End - AtmPres[mmHg]: 28.94  
 Start - AmbTemp[°F]: 44 End - AmbTemp[°F]: 67.7

<b>For Data Entry Use:</b>	
Project ID	_____
Filter ID	_____
Logged	_____
File Name	_____
Verified	_____

Site ID	Sampler Serial #	Filter No.	Start		End		Your Notes
			RotoFlow	ExpTime	RotoFlow	ExpTime	
Sample		090712-7	16.67 LPM	18:20	16.70 LPM	16:34	
		Filter Cmt:	DM-10 Sample / Filter - 100 ft from edge of sample				
		Site Cmt:	100 ft south of Penhouse stockpile				
		Filter Cmt:	Total Run Time: 493				
		Site Cmt:	Volume: TS 08, 24 M <sup>3</sup>				
		Filter Cmt:					
		Site Cmt:					
		Filter Cmt:					
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October 18, 2012

Wanda Davis  
E.I. DUPONT DE NEMOURS & CO., INC.  
URS - Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, DE 19713

Bureau Veritas Work Order No. 12100237

Reference: East Chicago, IN-IRM PROJECT/AIR FILTER SAMPLING

Dear Wanda Davis:

Bureau Veritas North America, Inc. received 1 sample on October 02, 2012 for the analyses presented in the following report.

This is a revised report. Please see the Case Narrative for details.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Karen Coonan

Client Services Representative

Electronic signature authorized through password protection

**Bureau Veritas North America, Inc.**

*Health, Safety, and Environmental Services*

22345 Roethel Drive

Novi, MI 48375

Main: (248) 344.1770

Fax: (248) 344.2655

[www.us.bureauveritas.com](http://www.us.bureauveritas.com)



## CASE NARRATIVE

Date: 18-Oct-12

---

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Project:** East Chicago, IN-IRM PROJECT/AIR FILTER SAMPLING  
**Work Order No** 12100237

---

REVISED REPORT: A revised report was issued on October 18, 2012. The reporting limit for the PM10 analysis has been lowered on sample -001A.

The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.

Analytical Comments for Method PM10\_ME, sample -001A: The results have not been blank corrected. Please note that a field blank should be submitted with each sample set.



# ANALYTICAL RESULTS

Date: 10/18/2012

Client: E.I. DUPONT DE NEMOURS & CO., INC.

COC No.:

Work Order No: 12100237

Sample Identification ECH-A-090712-4

Lab Number: 001A

Date Collected: 10/1/2012

Sample Type: Quartz Filter

Date Received: 10/2/2012

Air Volume (L): 8068

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 10/11/2012

Analyst: Sud, R.

Batch ID: 52708

### Mass Results

### Air Concentration Results

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic	0.2998		0.016	0.09000	µg/Filter	0.03716		0.001983	0.01116	µg/m3
Cadmium	0.07550	J	0.0014	0.2000	µg/Filter	0.009358	J	0.0001735	0.02479	µg/m3
Lead	5.327		0.0060	1.000	µg/Filter	0.6603		0.0007437	0.1239	µg/m3

Qualifiers: U - Not Detected at the MDL

B - Analyte detected in the associated Media Blank

J-Value is between the MDL and RL, estimated result

NA - Not Applicable



## ANALYTICAL RESULTS

Date: 18-Oct-12

---

**Client:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Project:** East Chicago, IN-IRM PROJECT/AIR FILTER SAMPLING  
**Sample Type:** Quartz Filter **Work Order No:** 12100237  
**Method Reference:** 40CFR50 Appendix J (Mod) **Date Received:** 10/2/2012  
**RL ( $\mu\text{g}$ ):** 100 **Analyst:** DDN

---

Lab No.	Sample Identification	Air Volume (liters)	PM10 Particulate Matter		Date Analyzed
			( $\mu\text{g}$ )	( $\text{ug}/\text{m}^3$ )	
001A	ECH-A-090712-4 10/01/12	8068	590	73	10/08/2012

---

General Notes:

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.

Back sections (if applicable) were checked and showed no significant breakthrough unless otherwise noted



BUREAU  
VERITAS

Bureau Veritas North America, Inc.

Date: 11-Oct-12

**QC SUMMARY REPORT**  
Method Blank

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.

**Work Order:** 12100237

**Project:** East Chicago, IN-IRM PROJECT

Sample ID: **MB-52708**

Batch ID: **52708**

Units: **µg/Filter**

Prep Date: **10/10/2012**

Client ID:

Run ID: **ME\_VA2B\_121011A**

Analysis Date: **10/11/2012**

SeqNo: **3211617**

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	ND	0.090									
Cadmium	ND	0.20									
Lead	0.0091	1.0									

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits



BUREAU  
VERITAS

Bureau Veritas North America, Inc.

Date: 11-Oct-12

# QC SUMMARY REPORT

Laboratory Control Spike

CLIENT: E.I. DUPONT DE NEMOURS & CO., INC.

Work Order: 12100237

Project: East Chicago, IN-IRM PROJECT

Sample ID: LCS-52708

Batch ID: 52708

Units: µg/Filter

Prep Date: 10/10/2012

Client ID:

Run ID: ME\_VA2B\_121011A

Analysis Date: 10/11/2012

SeqNo: 3211618

Analyte	Result 1	PQL	Spike Added	Unspiked		%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
				Sample	Result							
Arsenic	1.948	0.090	2	-0.0195	97.4	80	120					
Cadmium	2.029	0.20	2	-0.0044	101	80	120					
Lead	1.926	1.0	2	0.0091	95.9	80	120					

Qualifiers: ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
 J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits



BUREAU VERITAS

Bureau Veritas North America, Inc.

Date: 11-Oct-12

CLIENT: E.I. DUPONT DE NEMOURS & CO., INC.

Work Order: 12100237

Project: East Chicago, IN-IRM PROJECT

QC SUMMARY REPORT

Laboratory Control Spike Duplicate

Sample ID: LCSD

Batch ID: 52708

Units: µg/Filter

Prep Date: 10/10/2012

Client ID:

Run ID: ME\_VA2B\_121011A

SeqNo: 3211620

Analysis Date: 10/11/2012

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.874	0.090	2	-0.0195	93.7	80	120	1.948	3.86	20	
Cadmium	2.126	0.20	2	-0.0044	106	80	120	2.029	4.65	20	
Lead	1.999	1.0	2	0.0091	99.5	80	120	1.926	3.7	20	

Qualifiers:

ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits

B - Analyte detected in the associated Method Blank

J - Analyte detected below Reporting Limit

R - RPD outside accepted recovery limits





October 18, 2012

Wanda Davis  
E.I. DUPONT DE NEMOURS & CO., INC.  
URS - Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, DE 19713

Bureau Veritas Work Order No. 12091512

Reference: East Chicago, IN-IRM PROJECT/AIR FILTER SAMPLING

Dear Wanda Davis:

Bureau Veritas North America, Inc. received 1 sample on September 26, 2012 for the analyses presented in the following report.

This is a revised report. Please see the Case Narrative for details.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Karen Coonan

Client Services Representative

Electronic signature authorized through password protection

**Bureau Veritas North America, Inc.**

*Health, Safety, and Environmental Services*

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Novi, MI 48375

Main: (248) 344.1770

Fax: (248) 344.2655

[www.us.bureauveritas.com](http://www.us.bureauveritas.com)



## CASE NARRATIVE

Date: 18-Oct-12

---

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Project:** East Chicago, IN-IRM PROJECT/AIR FILTER SAMPLING  
**Work Order No** 12091512

---

REVISED REPORT: A revised report was issued on October 18, 2012. The reporting limit for the PM10 analysis has been lowered on sample -001A.

The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.

Analytical Comments for Method PM10\_ME, sample -001A: The results have not been blank corrected or recovery corrected.



# ANALYTICAL RESULTS

Date: 10/18/2012

Client: E.I. DUPONT DE NEMOURS & CO., INC.

COC No.:

Work Order No: 12091512

Sample Identification ECH-A-090712-3

Lab Number: 001A

Date Collected: 9/25/2012

Sample Type: Quartz Filter

Date Received: 9/26/2012

Air Volume (L): 8052

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 10/5/2012

Analyst: Sud, R.

Batch ID: 52641

### Mass Results

### Air Concentration Results

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic	0.08010	J	0.016	0.09000	µg/Filter	0.009948	J	0.001987	0.01118	µg/m3
Cadmium	0.02810	J	0.0014	0.2000	µg/Filter	0.003490	J	0.0001739	0.02484	µg/m3
Lead	2.263		0.0060	1.000	µg/Filter	0.2810		0.0007452	0.1242	µg/m3

Qualifiers: U - Not Detected at the MDL

B - Analyte detected in the associated Media Blank

J-Value is between the MDL and RL, estimated result

NA - Not Applicable



## ANALYTICAL RESULTS

Date: 18-Oct-12

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**Client:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Project:** East Chicago, IN-IRM PROJECT/AIR FILTER SAMPLING  
**Sample Type:** Quartz Filter **Work Order No:** 12091512  
**Method Reference:** 40CFR50 Appendix J (Mod) **Date Received:** 9/26/2012  
**RL ( $\mu\text{g}$ ):** 100 **Analyst:** DDN

---

Lab No.	Sample Identification	Air Volume (liters)	PM10 Particulate Matter		Date Analyzed
			( $\mu\text{g}$ )	( $\text{ug}/\text{m}^3$ )	
001A	ECH-A-090712-3 09/25/12	8052	850	110	09/28/2012

---

General Notes:

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.

Back sections (if applicable) were checked and showed no significant breakthrough unless otherwise noted



BUREAU  
VERITAS

Bureau Veritas North America, Inc.

Date: 08-Oct-12

# QC SUMMARY REPORT

Method Blank

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.

**Work Order:** 12091512

**Project:** East Chicago, IN-IRM PROJECT

Sample ID: **MB-52641**

Batch ID: **52641**

Units: **µg/Filter**

Prep Date: **10/3/2012**

Client ID:

Run ID: **ME\_VA2B\_121005B**

Analysis Date: **10/5/2012**

SeqNo: **3205139**

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	Result 2	%RPD	RPDLimit	Qual
Arsenic	0.0234	1.0							
Cadmium	ND	1.0							
Lead	0.0411	1.0							

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
 J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits



BUREAU  
VERITAS

Bureau Veritas North America, Inc.

Date: 08-Oct-12

# QC SUMMARY REPORT

Laboratory Control Spike

CLIENT: E.I. DUPONT DE NEMOURS & CO., INC.

Work Order: 12091512

Project: East Chicago, IN-IRM PROJECT

Sample ID: LCS-52641

Batch ID: 52641

Units: µg/Filter

Prep Date: 10/3/2012

Client ID:

Run ID: ME\_VA2B\_121005B

SeqNo: 3205140

Analysis Date: 10/5/2012

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.69	1.0	2	0.0234	83.3	80	120				
Cadmium	1.855	1.0	2	-0.002	92.8	80	120				
Lead	2.003	1.0	2	0.0411	98.1	80	120				

Qualifiers: ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
 J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits



BUREAU  
VERITAS

Bureau Veritas North America, Inc.

Date: 08-Oct-12

CLIENT: E.I. DUPONT DE NEMOURS & CO., INC.

Work Order: 12091512

Project: East Chicago, IN-IRM PROJECT

### QC SUMMARY REPORT

Laboratory Control Spike Duplicate

Sample ID: LCSD

Batch ID: 52641

Units: µg/Filter

Analysis Date: 10/5/2012

Prep Date: 10/3/2012

Client ID:

Run ID: ME\_VA2B\_121005B

SeqNo: 3205142

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.822	1.0	2	0.0234	89.9	80	120	1.69	7.52	20	
Cadmium	1.985	1.0	2	-0.002	99.2	80	120	1.855	6.75	20	
Lead	2.153	1.0	2	0.0411	106	80	120	2.003	7.21	20	

Qualifiers:

ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits

B - Analyte detected in the associated Method Blank

J - Analyte detected below Reporting Limit

R - RPD outside accepted recovery limits





October 18, 2012

Wanda Davis  
E.I. DUPONT DE NEMOURS & CO., INC.  
URS - Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, DE 19713

Bureau Veritas Work Order No. 12091261

Reference: East Chicago, IN-IRM PROJECT/AIR FILTER SAMPLING

Dear Wanda Davis:

Bureau Veritas North America, Inc. received 1 sample on September 24, 2012 for the analyses presented in the following report.

This is a revised report. Please see the Case Narrative for details.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Karen Coonan

Client Services Representative

Electronic signature authorized through password protection

**Bureau Veritas North America, Inc.**

*Health, Safety, and Environmental Services*

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Novi, MI 48375

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## CASE NARRATIVE

Date: 18-Oct-12

---

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Project:** East Chicago, IN-IRM PROJECT/AIR FILTER SAMPLING  
**Work Order No** 12091261

---

REVISED REPORT: A revised report was issued on October 18, 2012. The reporting limit for the PM10 analysis has been lowered on sample -001A.

The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.

Analytical Comments for Method PM10\_ME, sample -001A: The results have not been blank corrected or recovery corrected.

Analytical Comments for Method EPA\_IO35, sample LCSD: The Relative Percent Difference (RPD) was above the laboratory statistical limits for cadmium and lead; samples have not been recovery corrected.



# ANALYTICAL RESULTS

Date: 10/18/2012

Client: E.I. DUPONT DE NEMOURS & CO., INC.

COC No.:

Work Order No: 12091261

Sample Identification ECH-A-090712-2

Lab Number: 001A

Date Collected: 9/20/2012

Sample Type: Quartz Filter

Date Received: 9/24/2012

Air Volume (L): 8168

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 10/5/2012

Analyst: Sud, R.

Batch ID: 52570

### Mass Results

### Air Concentration Results

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic	0.04910	J	0.016	0.09000	µg/Filter	0.006011	J	0.001959	0.01102	µg/m3
Cadmium	0.002400	J	0.0014	0.2000	µg/Filter	0.0002938	J	0.0001714	0.02449	µg/m3
Lead	0.2452	J	0.0060	1.000	µg/Filter	0.03002	J	0.0007346	0.1224	µg/m3

Qualifiers: U - Not Detected at the MDL

B - Analyte detected in the associated Media Blank

J-Value is between the MDL and RL, estimated result

NA - Not Applicable



## ANALYTICAL RESULTS

Date: 18-Oct-12

---

**Client:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Project:** East Chicago, IN-IRM PROJECT/AIR FILTER SAMPLING  
**Sample Type:** Quartz Filter **Work Order No:** 12091261  
**Method Reference:** 40CFR50 Appendix J (Mod) **Date Received:** 9/24/2012  
**RL ( $\mu\text{g}$ ):** 100 **Analyst:** DDN

---

Lab No.	Sample Identification	Air Volume (liters)	PM10 Particulate Matter		Date Analyzed
			( $\mu\text{g}$ )	( $\text{ug}/\text{m}^3$ )	
001A	ECH-A-090712-2 09/20/12	8168	530	65	09/27/2012

---

General Notes:

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.

Back sections (if applicable) were checked and showed no significant breakthrough unless otherwise noted



BUREAU  
VERITAS

Bureau Veritas North America, Inc.

Date: 08-Oct-12

**QC SUMMARY REPORT**  
Method Blank

CLIENT: E.I. DUPONT DE NEMOURS & CO., INC.

Work Order: 12091261

Project: East Chicago, IN-IRM PROJECT

Sample ID: MIB-52570 Batch ID: 52570 Units: µg/Filter Analysis Date: 10/5/2012 Prep Date: 9/27/2012

Client ID: Run ID: ME\_VA2B\_121005A SeqNo: 3205131

Analyte	Result 1	PQL	Spike Added	Unspiked		Result 2	%RPD	RPDLimit	Qual
				Sample Result	%REC				
Arsenic	0.0479	0.090							
Cadmium	ND	0.20							
Lead	0.0055	1.0							

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank  
J - Analyte detected below Reporting Limit R - RPD outside accepted recovery limits



BUREAU  
VERITAS

Bureau Veritas North America, Inc.

Date: 08-Oct-12

# QC SUMMARY REPORT

Laboratory Control Spike

CLIENT: E.I. DUPONT DE NEMOURS & CO., INC.

Work Order: 12091261

Project: East Chicago, IN-IRM PROJECT

Sample ID: LCS-52570

Batch ID: 52570

Units: µg/Filter

Analysis Date: 10/5/2012

Prep Date: 9/27/2012

Client ID:

Run ID: ME\_VA2B\_121005A

SeqNo: 3205132

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.738	0.090	2	0.0479	84.5	80	120				
Cadmium	1.631	0.20	2	-0.004	81.5	80	120				
Lead	1.754	1.0	2	0.0055	87.4	80	120				

Qualifiers: ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
 J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits



BUREAU  
VERITAS

Bureau Veritas North America, Inc.

Date: 08-Oct-12

CLIENT: E.I. DUPONT DE NEMOURS & CO., INC.

Work Order: 12091261

Project: East Chicago, IN-IRM PROJECT

### QC SUMMARY REPORT

Laboratory Control Spike Duplicate

Sample ID: LCSD Batch ID: 52570 Units: µg/Filter Analysis Date: 10/5/2012 Prep Date: 9/27/2012  
Client ID: Run ID: ME\_VA2B\_121005A SeqNo: 3205135

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.874	0.090	2	0.0479	91.3	80	120	1.738	7.53	20	
Cadmium	2.037	0.20	2	-0.004	102	80	120	1.631	22.2	20	R
Lead	2.236	1.0	2	0.0055	112	80	120	1.754	24.1	20	R

RPD was outside of statistical limits for cadmium and lead; Samples have not been recovery corrected.

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank  
J - Analyte detected below Reporting Limit R - RPD outside accepted recovery limits





October 18, 2012

Wanda Davis  
E.I. DUPONT DE NEMOURS & CO., INC.  
URS - Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, DE 19713

Bureau Veritas Work Order No. 12090894

Reference: DUPONT-EAST CHICAGO, IN-IRM PROJECT

Dear Wanda Davis:

Bureau Veritas North America, Inc. received 1 sample on September 18, 2012 for the analyses presented in the following report.

This is a revised report. Please see the Case Narrative for details.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Karen Coonan

Client Services Representative

Electronic signature authorized through password protection

**Bureau Veritas North America, Inc.**

*Health, Safety, and Environmental Services*

22345 Roethel Drive

Novi, MI 48375

Main: (248) 344.1770

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## CASE NARRATIVE

Date: 18-Oct-12

---

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Project:** DUPONT-EAST CHICAGO, IN-IRM PROJECT  
**Work Order No** 12090894

---

REVISED REPORT: A revised report was issued on October 18, 2012. The reporting limit for the PM10 analysis has been lowered on sample -001A

The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.

Analytical Comments for Method PM10\_ME, sample -001A: The results have not been blank corrected or recovery corrected.

Analytical Comments for Method EPA\_IO35, sample LCSD: The Relative Percent Difference (RPD) was above the laboratory statistical limits for cadmium and lead; sample has not been recovery corrected.



# ANALYTICAL RESULTS

Date: 10/18/2012

Client: E.I. DUPONT DE NEMOURS & CO., INC.

COC No.:

Work Order No: 12090894

Sample Identification ECH-A-090712-1

Lab Number: 001A

Date Collected: 9/14/2012

Sample Type: Quartz Filter

Date Received: 9/18/2012

Air Volume (L): 8118

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 10/5/2012

Analyst: Sud, R.

Batch ID: 52570

### Mass Results

### Air Concentration Results

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic	0.06030	J	0.016	0.09000	µg/Filter	0.007428	J	0.001971	0.01109	µg/m3
Cadmium		U	0.0014	0.2000	µg/Filter		U	0.0001725	0.02464	µg/m3
Lead	0.1578	J	0.0060	1.000	µg/Filter	0.01944	J	0.0007391	0.1232	µg/m3

Qualifiers: U - Not Detected at the MDL

B - Analyte detected in the associated Media Blank

J-Value is between the MDL and RL, estimated result

NA - Not Applicable



## ANALYTICAL RESULTS

Date: 18-Oct-12

**Client:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Project:** DUPONT-EAST CHICAGO, IN-IRM PROJECT  
**Sample Type:** Quartz Filter  
**Method Reference:** 40CFR50 Appendix J (Mod)  
**RL ( $\mu\text{g}$ ):** 100

**Work Order No:** 12090894  
**Date Received:** 9/18/2012  
**Analyst:** DDN

Lab No.	Sample Identification	Air Volume (liters)	PM10 Particulate Matter		Date Analyzed
			( $\mu\text{g}$ )	( $\text{ug}/\text{m}^3$ )	
001A	ECH-A-090712-1 09/14/12	8118	300	37	09/27/2012

General Notes:

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.

Back sections (if applicable) were checked and showed no significant breakthrough unless otherwise noted



BUREAU VERITAS

Bureau Veritas North America, Inc.

Date: 08-Oct-12

QC SUMMARY REPORT  
Method Blank

CLIENT: E.I. DUPONT DE NEMOURS & CO., INC.  
Work Order: 12090894  
Project: DUPONT-EAST CHICAGO, IN-IRM PROJEC

Sample ID: MB-52570 Batch ID: 52570 Units: µg/Filter Analysis Date: 10/5/2012 Prep Date: 9/27/2012  
Client ID: Run ID: ME\_VA2B\_121005A SeqNo: 3205131

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	0.0479	0.090									
Cadmium	ND	0.20									
Lead	0.0055	1.0									

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank  
J - Analyte detected below Reporting Limit R - RPD outside accepted recovery limits



BUREAU  
VERITAS

Bureau Veritas North America, Inc.

Date: 08-Oct-12

**QC SUMMARY REPORT**  
Laboratory Control Spike

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12090894  
**Project:** DUPONT-EAST CHICAGO, IN-IRM PROJEC

**Sample ID:** LCS-52570      **Batch ID:** 52570      **Units:** µg/Filter      **Analysis Date:** 10/5/2012      **Prep Date:** 9/27/2012  
**Client ID:**      **Run ID:** ME\_VA2B\_121005A      **SeqNo:** 3205132

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.738	0.090	2	0.0479	84.5	80	120				
Cadmium	1.631	0.20	2	-0.004	81.5	80	120				
Lead	1.754	1.0	2	0.0055	87.4	80	120				

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits



BUREAU  
VERITAS

Bureau Veritas North America, Inc.

Date: 08-Oct-12

**QC SUMMARY REPORT**  
Laboratory Control Spike Duplicate

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12090894  
**Project:** DUPONT-EAST CHICAGO, IN-IRM PROJEC

**Sample ID:** LCSD      **Batch ID:** 52570      **Units:** µg/Filter      **Analysis Date:** 10/5/2012      **Prep Date:** 9/27/2012  
**Client ID:**      **Run ID:** ME\_VA2B\_121005A      **SeqNo:** 3205135

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.874	0.090	2	0.0479	91.3	80	120	1.738	7.53	20	
Cadmium	2.037	0.20	2	-0.004	102	80	120	1.631	22.2	20	R
Lead	2.236	1.0	2	0.0055	112	80	120	1.754	24.1	20	R

RPD was outside of statistical limits for cadmium and lead; Samples have not been recovery corrected.

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits





December 17, 2012

Wanda Davis  
E.I. DUPONT DE NEMOURS & CO., INC.  
URS - Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, DE 19713

Bureau Veritas Work Order No. 12120576

Reference: East Chicago, IN-IRM PROJECT

Dear Wanda Davis:

Bureau Veritas North America, Inc. received 1 sample on December 11, 2012 for the analyses presented in the following report.

Enclosed is a copy of the Chain-of-Custody record, acknowledging receipt of these samples. Please note that any unused portion of the samples will be discarded 30 days after the date of this report, unless you have requested otherwise.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Karen Coonan

Client Services Representative

Electronic signature authorized through password protection

**Bureau Veritas North America, Inc.**

*Health, Safety, and Environmental Services*

22345 Roethel Drive

Novi, MI 48375

Main: (248) 344.1770

Fax: (248) 344.2655

[www.us.bureauveritas.com](http://www.us.bureauveritas.com)



## CASE NARRATIVE

Date: 17-Dec-12

---

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.

**Project:** East Chicago, IN-IRM PROJECT

**Work Order No** 12120576

---

The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.



# ANALYTICAL RESULTS

Date: 12/17/2012

Client: E.I. DUPONT DE NEMOURS & CO., INC.

COC No.:

Work Order No: 12120576

Sample Identification ECH-A-090712-19

Lab Number: 001A

Date Collected: 12/10/2012

Sample Type: Quartz Filter

Date Received: 12/11/2012

Air Volume (L): 7340

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 12/17/2012

Analyst: Sud, R.

Batch ID: 53489

### Mass Results

### Air Concentration Results

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic		U	0.016	0.09000	µg/Filter		U	0.002180	0.01226	µg/m3
Cadmium	0.01090	J	0.0014	0.2000	µg/Filter	0.001485	J	0.0001907	0.02725	µg/m3
Lead	0.1592	J	0.0060	1.000	µg/Filter	0.02169	J	0.0008174	0.1362	µg/m3

Qualifiers: U - Not Detected at the MDL

B - Analyte detected in the associated Media Blank

J-Value is between the MDL and RL, estimated result

NA - Not Applicable



# ANALYTICAL RESULTS

Date: 17-Dec-12

Client: E.I. DUPONT DE NEMOURS & CO., INC.

Project: East Chicago, IN-IRM PROJECT

Sample Type: Quartz Filter

Work Order No: 12120576

Method Reference 40CFR50 Appendix J (Mod)

Date Received: 12/11/2012

RL ( $\mu\text{g}$ ): 100

Analyst: DDN

Lab No.	Sample Identification	Air Volume (liters)	PM10 Particulate Matter		Date Analyzed
			( $\mu\text{g}$ )	( $\text{ug}/\text{m}^3$ )	
001A	ECH-A-090712-19 12/10/12	7340	140	19	12/17/2012

General Notes:

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.

Back sections (if applicable) were checked and showed no significant breakthrough unless otherwise noted.



**BUREAU  
VERITAS**

**Bureau Veritas North America, Inc.**

**Date:** 17-Dec-12

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12120576  
**Project:** East Chicago, IN-IRM PROJECT

**QC SUMMARY REPORT**  
Method Blank

**Sample ID:** MB-53489      **Batch ID:** 53489      **Units:** µg/Filter      **Analysis Date:** 12/17/2012      **Prep Date:** 12/17/2012  
**Client ID:**      **Run ID:** ME\_VA2B\_121217A      **SeqNo:** 3293476

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	ND										
Cadmium	0.0151										
Lead	0.0096										

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits



Bureau Veritas North America, Inc.

Date: 17-Dec-12

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12120576  
**Project:** East Chicago, IN-IRM PROJECT

**QC SUMMARY REPORT**  
 Laboratory Control Spike

Sample ID: **LCS-53489** Batch ID: **53489** Units: **µg/Filter** Analysis Date: **12/17/2012** Prep Date: **12/17/2012**  
 Client ID: Run ID: **ME\_VA2B\_121217A** SeqNo: **3293477**

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.641	1.0	2	0	82.1	80	120				
Cadmium	2.052	1.0	2	0.0151	102	80	120				
Lead	1.785	1.0	2	0.0096	88.8	80	120				

**Qualifiers:** ND - Not Detected at the Reporting Limit  
 J - Analyte detected below Reporting Limit

S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank



Bureau Veritas North America, Inc.

Date: 17-Dec-12

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12120576  
**Project:** East Chicago, IN-IRM PROJECT

**QC SUMMARY REPORT**  
 Laboratory Control Spike Duplicate

Sample ID: **LCSD** Batch ID: **53489** Units: **µg/Filter** Analysis Date: **12/17/2012** Prep Date: **12/17/2012**  
 Client ID: Run ID: **ME\_VA2B\_121217A** SeqNo: **3293479**

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.73	1.0	2	0	86.5	80	120	1.641	5.23	20	
Cadmium	2.21	1.0	2	0.0151	110	80	120	2.052	7.39	20	
Lead	1.911	1.0	2	0.0096	95.1	80	120	1.785	6.81	20	

**Qualifiers:** ND - Not Detected at the Reporting Limit  
 J - Analyte detected below Reporting Limit

S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank



12120576

PM Sampling - Field Data Log

Project: DuPont East Chicago  
 Sampling Date: 12/10/12 Page 1 of 1  
 Start - AtmPres[mmHg]: 28.88 End - AtmPres[mmHg]: 28.96  
 Start - AmbTemp[°F]: 30.4 End - AmbTemp[°F]: 35.4

For Data Entry Use:  
 Project ID \_\_\_\_\_  
 Filter ID \_\_\_\_\_  
 Logged \_\_\_\_\_  
 File Name \_\_\_\_\_  
 Verified \_\_\_\_\_

Site ID	Sampler Serial #	Filter No.	Start		End		Your Notes
			<del>Flow</del>	<del>Time</del>	RotoFlow	ElapTime	
Area F		09072-19	16.67	8.25	16.67	15:45	
	Filter Cmt: PM-10 Quartz. Wind out of WSW @ 8 mph.						
	Site Cmt: North of Area F, & 200' ENE of excavation work.						
	Filter Cmt: Run Time: 439 min						
	Site Cmt: Flow Volume: 7.34 m <sup>3</sup>						
	Filter Cmt:						
	Site Cmt:						
	Filter Cmt:						
	Site Cmt:						
	Filter Cmt:						
	Site Cmt:						
	Filter Cmt:						
	Site Cmt:						
	Filter Cmt:						
	Site Cmt:						



December 14, 2012

Wanda Davis  
E.I. DUPONT DE NEMOURS & CO., INC.  
URS - Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, DE 19713

Bureau Veritas Work Order No. 12120283

Reference: East Chicago, IN-IRM PROJECT

Dear Wanda Davis:

Bureau Veritas North America, Inc. received 1 sample on December 05, 2012 for the analyses presented in the following report.

Enclosed is a copy of the Chain-of-Custody record, acknowledging receipt of these samples. Please note that any unused portion of the samples will be discarded 30 days after the date of this report, unless you have requested otherwise.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Karen Coonan

Client Services Representative

Electronic signature authorized through password protection

**Bureau Veritas North America, Inc.**

*Health, Safety, and Environmental Services*

22345 Roethel Drive

Novi, MI 48375

Main: (248) 344.1770

Fax: (248) 344.2655

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## CASE NARRATIVE

Date: 14-Dec-12

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**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.

**Project:** East Chicago, IN-IRM PROJECT

**Work Order No** 12120283

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The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.

Analytical Comments for Method PM10\_ME\_47MM, sample -001A: The results have not been blank corrected.



**BUREAU  
VERITAS**

# ANALYTICAL RESULTS

Date: 12/14/2012

Client: E.I. DUPONT DE NEMOURS & CO., INC.

COC No.:

Work Order No: 12120283

Sample Identification ECH-A-090712-38

Lab Number: 001A

Date Collected: 12/4/2012

Sample Type: Quartz Filter

Date Received: 12/5/2012

Air Volume (L): 7140

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 12/12/2012

Analyst: Sud, R.

Batch ID: 53415

**Mass Results**

**Air Concentration Results**

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic		U	0.016	0.09000	µg/Filter		U	0.002241	0.01261	µg/m3
Cadmium	0.01390	J	0.0014	0.2000	µg/Filter	0.001947	J	0.0001961	0.02801	µg/m3
Lead	0.1572	J	0.0060	1.000	µg/Filter	0.02202	J	0.0008403	0.1401	µg/m3

Qualifiers: U - Not Detected at the MDL

B - Analyte detected in the associated Media Blank

J-Value is between the MDL and RL, estimated result

NA - Not Applicable



## ANALYTICAL RESULTS

Date: 14-Dec-12

Client: E.I. DUPONT DE NEMOURS & CO., INC.

Project: East Chicago, IN-IRM PROJECT

Sample Type: Quartz Filter

Work Order No: 12120283

Method Reference 40CFR50 Appendix J (Mod)

Date Received: 12/5/2012

RL ( $\mu\text{g}$ ): 100

Analyst: DDN

Lab No.	Sample Identification	Air Volume (liters)	PM10 Particulate Matter		Date Analyzed
			( $\mu\text{g}$ )	( $\text{ug}/\text{m}^3$ )	
001A	ECH-A-090712-38 12/04/12	7140	120	17	12/10/2012

General Notes:

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.

Back sections (if applicable) were checked and showed no significant breakthrough unless otherwise noted.



# Request for Laboratory Analytical Services

**IMPORTANT:** Date results required: \_\_\_\_\_

Page: 1

For Lab Use Only  
Lab Project No. \_\_\_\_\_

Rush charges authorized? Yes  No   
Fax or  E-mail results

E-mail Address: \_\_\_\_\_

## Bureau Veritas North America, Inc.

12120283

Report results to: Client Project Number: DuPont - East Chicago IRM Project P.O. No. \_\_\_\_\_  
 Name Wanda Davis - ADQM  
 Company URS Corp. Name LBIO 65636  
 Mailing Address Iron Hill Corp. Center, Ogletown Rd. Ste 300 Company 9267-77201-WHO6507754  
 City, State, Zip Newark, DE 19713 Address \_\_\_\_\_  
 Telephone No. 302-781-5892 City, State, Zip \_\_\_\_\_  
 Fax No. \_\_\_\_\_

Special instructions and/or specific regulatory requirements: \_\_\_\_\_  
 (method, limit of detection, etc.) \_\_\_\_\_

Soil samples only: Which state are these from? \_\_\_\_\_  
 Water samples are: \_\_\_\_\_  
 Drinking water \_\_\_\_\_ Groundwater \_\_\_\_\_  
 Wastewater \_\_\_\_\_

Client Sample Identification	Date Sampled	Time Sampled	Matrix/Media	Air Volume (Liters)	# of Jars	ANALYSIS REQUESTED (List each analyte on the lines below, multiple analytes per line)
<u>ECH-A-090712-38</u>	<u>12-4-2012</u>	<u>752</u>	<u>Filter</u>	<u>7.14M<sup>3</sup></u>	<u>1</u>	<u>Metals (As, Cd, Pb); PM-10</u>
				<u>1.45M<sup>3</sup></u>		

Collected by: Garet Hintz Date/Time 12-4-2012 7:52 Collector's Signature: [Signature] Date/Time 12-4-2012  
 Relinquished by: Garet Hintz Date/Time 12-4-2012 18:28 Received by: [Signature] Date/Time 12-5-12 18:28  
 Relinquished by: \_\_\_\_\_ Date/Time \_\_\_\_\_  
 Method of Shipment: Fed-ex Sample Condition on Receipt: \_\_\_\_\_  
 Authorized by: \_\_\_\_\_ Acceptable  Other: \_\_\_\_\_ (Explain) \_\_\_\_\_

**Ship to:**

<b>Detroit Lab</b> 22345 Roethel Drive Novi, MI 48375 248.344.2652 800.805.5887 Fax: 248.344.2655	<b>Atlanta Lab</b> 3380 Chastain Meadows Pkwy., Ste 300 Kennesaw, GA 30144 770.499.7500 800.252.9919 Fax: 770.499.7511	<b>Chicago Lab</b> 95 Oakwood Road Lake Zurich, IL 60047 888.576.7522 847.726.3320 Fax: 847.726.3323	<b>Canadian Clients</b> 1415 Janette Ave Windsor, ON N8X 1Z1  <b>Visit our Website:</b> <a href="http://www.us.bureauveritas.com/nisa">www.us.bureauveritas.com/nisa</a>
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December 06, 2012

Wanda Davis  
E.I. DUPONT DE NEMOURS & CO., INC.  
URS - Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, DE 19713

Bureau Veritas Work Order No. 12111544

Reference: East Chicago, IN-IRM PROJECT

Dear Wanda Davis:

Bureau Veritas North America, Inc. received 1 sample on November 28, 2012 for the analyses presented in the following report.

Enclosed is a copy of the Chain-of-Custody record, acknowledging receipt of these samples. Please note that any unused portion of the samples will be discarded 30 days after the date of this report, unless you have requested otherwise.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Karen Coonan

Client Services Representative

Electronic signature authorized through password protection

**Bureau Veritas North America, Inc.**

*Health, Safety, and Environmental Services*

22345 Roethel Drive

Novi, MI 48375

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Fax: (248) 344.2655

[www.us.bureauveritas.com](http://www.us.bureauveritas.com)



## CASE NARRATIVE

Date: 06-Dec-12

---

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.

**Project:** East Chicago, IN-IRM PROJECT

**Work Order No** 12111544

---

The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.

Analytical Comments for Method PM10\_ME\_47MM, sample -001A: The results have not been blank corrected. Please note that a field blank should be submitted with each sample set.



**BUREAU  
VERITAS**

# ANALYTICAL RESULTS

Date: 12/6/2012

Client: E.I. DUPONT DE NEMOURS & CO., INC.

COC No.:

Work Order No: 12111544

Sample Identification ECH-A-090712-18

Lab Number: 001A

Date Collected: 11/27/2012

Sample Type: Quartz Filter

Date Received: 11/28/2012

Air Volume (L): 7030

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 12/5/2012

Analyst: Sud, R.

Batch ID: 53329

### Mass Results

### Air Concentration Results

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic		U	0.016	0.09000	µg/Filter		U	0.002276	0.01280	µg/m3
Cadmium	0.01590	J	0.0014	0.2000	µg/Filter	0.002262	J	0.0001991	0.02845	µg/m3
Lead	0.3720	J	0.0060	1.000	µg/Filter	0.05292	J	0.0008535	0.1422	µg/m3

Qualifiers: U - Not Detected at the MDL

B - Analyte detected in the associated Media Blank

J-Value is between the MDL and RL, estimated result

NA - Not Applicable



# ANALYTICAL RESULTS

Date: 06-Dec-12

Client: E.I. DUPONT DE NEMOURS & CO., INC.

Project: East Chicago, IN-IRM PROJECT

Sample Type: Quartz Filter

Work Order No: 12111544

Method Reference 40CFR50 Appendix J (Mod)

Date Received: 11/28/2012

RL ( $\mu\text{g}$ ): 100

Analyst: DDN

Lab No.	Sample Identification	Air Volume (liters)	PM10 Particulate Matter		
			( $\mu\text{g}$ )	( $\text{ug}/\text{m}^3$ )	Date Analyzed
001A	ECH-A-090712-18 11/27/12	7030	<100	<14	12/04/2012

General Notes:

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.

Back sections (if applicable) were checked and showed no significant breakthrough unless otherwise noted.



**BUREAU  
VERITAS**

**Bureau Veritas North America, Inc.**

**Date:** 06-Dec-12

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12111544  
**Project:** East Chicago, IN-IRM PROJECT

**QC SUMMARY REPORT**  
Method Blank

**Sample ID:** MB-53329      **Batch ID:** 53329      **Units:** µg/Filter      **Analysis Date:** 12/5/2012      **Prep Date:** 12/5/2012  
**Client ID:**      **Run ID:** ME\_VA2B\_121205A      **SeqNo:** 3276980

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	ND										
Cadmium	ND										
Lead	ND										

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits



Bureau Veritas North America, Inc.

Date: 06-Dec-12

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12111544  
**Project:** East Chicago, IN-IRM PROJECT

**QC SUMMARY REPORT**  
 Laboratory Control Spike

Sample ID: **LCS-53329** Batch ID: **53329** Units: **µg/Filter** Analysis Date: **12/5/2012** Prep Date: **12/5/2012**  
 Client ID: Run ID: **ME\_VA2B\_121205A** SeqNo: **3276981**

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.607	1.0	2	0	80.3	80	120				
Cadmium	1.946	1.0	2	0	97.3	80	120				
Lead	2.017	1.0	2	0	101	80	120				

**Qualifiers:** ND - Not Detected at the Reporting Limit  
 J - Analyte detected below Reporting Limit

S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank



Bureau Veritas North America, Inc.

Date: 06-Dec-12

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12111544  
**Project:** East Chicago, IN-IRM PROJECT

**QC SUMMARY REPORT**  
 Laboratory Control Spike Duplicate

Sample ID: **LCSD** Batch ID: **53329** Units: **µg/Filter** Analysis Date: **12/5/2012** Prep Date: **12/5/2012**  
 Client ID: Run ID: **ME\_VA2B\_121205A** SeqNo: **3276983**

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.686	1.0	2	0	84.3	80	120	1.607	4.82	20	
Cadmium	1.971	1.0	2	0	98.5	80	120	1.946	1.27	20	
Lead	2.101	1.0	2	0	105	80	120	2.017	4.06	20	

**Qualifiers:** ND - Not Detected at the Reporting Limit  
 J - Analyte detected below Reporting Limit

S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank





December 03, 2012

Wanda Davis  
E.I. DUPONT DE NEMOURS & CO., INC.  
URS - Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, DE 19713

Bureau Veritas Work Order No. 12111400

Reference: East Chicago/IRM PROJECT

Dear Wanda Davis:

Bureau Veritas North America, Inc. received 2 samples on November 23, 2012 for the analyses presented in the following report.

Enclosed is a copy of the Chain-of-Custody record, acknowledging receipt of these samples. Please note that any unused portion of the samples will be discarded 30 days after the date of this report, unless you have requested otherwise.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Karen Coonan

Client Services Representative

Electronic signature authorized through password protection

**Bureau Veritas North America, Inc.**

*Health, Safety, and Environmental Services*

22345 Roethel Drive

Novi, MI 48375

Main: (248) 344.1770

Fax: (248) 344.2655

[www.us.bureauveritas.com](http://www.us.bureauveritas.com)



## CASE NARRATIVE

Date: 03-Dec-12

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**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.

**Project:** East Chicago/IRM PROJECT

**Work Order No** 12111400

---

The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.

Analytical Comments for Method PM10\_ME\_47MM, sample -002A: Actual value of the particulate blank was 40ug; the results have not been blank corrected.



BUREAU  
VERITAS

# ANALYTICAL RESULTS

Date: 12/3/2012

Client: E.I. DUPONT DE NEMOURS & CO., INC.

COC No.:

Work Order No: 12111400

Sample Identification ECH-A-090712-16

Lab Number: 001A

Date Collected: 11/20/2012

Sample Type: Quartz Filter

Date Received: 11/23/2012

Air Volume (L): 7060

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 11/29/2012

Analyst: Sud, R.

Batch ID: 53270

### Mass Results

### Air Concentration Results

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic		U	0.016	0.09000	µg/Filter		U	0.002266	0.01275	µg/m3
Cadmium	0.03670	J	0.0014	0.2000	µg/Filter	0.005198	J	0.0001983	0.02833	µg/m3
Lead	1.986		0.0060	1.000	µg/Filter	0.2813		0.0008499	0.1416	µg/m3

Sample Identification ECH-A-090712-17 (FIELD BLANK)

Lab Number: 002A

Date Collected: 11/21/2012

Sample Type: Quartz Filter

Date Received: 11/23/2012

Air Volume (L): NA

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 11/29/2012

Analyst: Sud, R.

Batch ID: 53270

### Mass Results

### Air Concentration Results

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic		U	0.016	0.09000	µg/Filter		U	0.016	0.09	µg/Filter
Cadmium	0.01040	J	0.0014	0.2000	µg/Filter	0.01040	J	0.001	0.2	µg/Filter
Lead	0.006500	J	0.0060	1.000	µg/Filter	0.006500	J	0.006	1	µg/Filter

Qualifiers: U - Not Detected at the MDL

B - Analyte detected in the associated Media Blank

J-Value is between the MDL and RL, estimated result

NA - Not Applicable



# ANALYTICAL RESULTS

Date: 03-Dec-12

Client: E.I. DUPONT DE NEMOURS & CO., INC.

Project: East Chicago/IRM PROJECT

Sample Type: Quartz Filter

Work Order No: 12111400

Method Reference 40CFR50 Appendix J (Mod)

Date Received: 11/23/2012

RL ( $\mu\text{g}$ ): 100

Analyst: DDN

Lab No.	Sample Identification	Air Volume (liters)	PM10 Particulate Matter		Date Analyzed
			( $\mu\text{g}$ )	( $\text{ug}/\text{m}^3$ )	
001A	ECH-A-090712-16 11/20/12	7060	600	85	11/28/2012
002A	ECH-A-090712-17 (FIELD BLANK) 11/21/12	0	<100	--	11/28/2012

General Notes:

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.

Back sections (if applicable) were checked and showed no significant breakthrough unless otherwise noted.



Bureau Veritas North America, Inc.

Date: 03-Dec-12

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12111400  
**Project:** East Chicago/TRM PROJECT

**QC SUMMARY REPORT**  
 Method Blank

Sample ID: **MB-53270** Batch ID: **53270** Units: **µg/Filter** Analysis Date: **11/29/2012** Prep Date: **11/29/2012**  
 Client ID: Run ID: **ME\_VA2B\_121129A** SeqNo: **3271589**

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	ND										
Cadmium	0.0059		1.0								
Lead	0.013		1.0								

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
 J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits



Bureau Veritas North America, Inc.

Date: 03-Dec-12

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12111400  
**Project:** East Chicago/TRM PROJECT

**QC SUMMARY REPORT**  
 Laboratory Control Spike

Sample ID: **LCS-53270** Batch ID: **53270** Units: **µg/Filter** Analysis Date: **11/29/2012** Prep Date: **11/29/2012**  
 Client ID: Run ID: **ME\_VA2B\_121129A** SeqNo: **3271590**

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.798	1.0	2	0	89.9	80	120				
Cadmium	1.759	1.0	2	0.0059	87.7	80	120				
Lead	2.012	1.0	2	0.013	99.9	80	120				

**Qualifiers:** ND - Not Detected at the Reporting Limit  
 J - Analyte detected below Reporting Limit

S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank



Bureau Veritas North America, Inc.

Date: 03-Dec-12

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12111400  
**Project:** East Chicago/TRM PROJECT

**QC SUMMARY REPORT**  
 Laboratory Control Spike Duplicate

Sample ID: LCSD Batch ID: 53270 Units: µg/Filter Analysis Date: 11/29/2012 Prep Date: 11/29/2012  
 Client ID: Run ID: ME\_VA2B\_121129A SeqNo: 3271593

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.871	1.0	2	0	93.6	80	120	1.798	3.96	20	
Cadmium	1.931	1.0	2	0.0059	96.2	80	120	1.759	9.3	20	
Lead	2.113	1.0	2	0.013	105	80	120	2.012	4.9	20	

**Qualifiers:** ND - Not Detected at the Reporting Limit  
 J - Analyte detected below Reporting Limit

S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank



# Request for Laboratory Analytical Services

Page: 1

For Lab Use Only  
Lab Project No.

12/1/00

**IMPORTANT:** Date results required:  Yes  No  
Rush charges authorized?  Yes  No  
Fax or  E-mail results   
E-mail Address:

## Bureau Veritas North America, Inc.

Report results to: Client Project Number: DuPont - East Chicago IRM Project P.O. No.  
Name Wanda Davis - ADQM  
Company URS Corp.  
Mailing Address Iron Hill Corp. Center, Ogletown Rd. Ste. 300  
City, State, Zip Newark, DE 19713  
Telephone No. 302-781-5892 Fax No. \_\_\_\_\_

Send invoice to:  
Name LBIO 65636  
Company 9267-77201-WHO6507754  
Address \_\_\_\_\_  
City, State, Zip \_\_\_\_\_

Special instructions and/or specific regulatory requirements:  
(method, limit of detection, etc.)

Soil samples only: Which state are these from? \_\_\_\_\_  
Water samples are: \_\_\_\_\_  
Drinking water \_\_\_\_\_ Groundwater \_\_\_\_\_  
Wastewater \_\_\_\_\_

Client Sample Identification	Date Sampled	Time Sampled	Matrix/Media	Air Volume (Liters)	# of Jars	ANALYSIS REQUESTED (List each analyte on the lines below, multiple analytes per line)
ECH-A-090712-16	11/20/12	7:42	Filter	7.06 m3	1	Metals (As, Cd, Pb); PM-10
ECH-A-090712-17 (Field Blank)	11/21/12	7:15	Filter	NA	1	Metals (As, Cd, Pb); PM-10

Collected by: Keith Thompson Date/Time 11/21/12 1600 Collector's Signature: Keith Thompson Date/Time 11/21/12 1600  
Relinquished by: [Signature] Date/Time 11/21/12 1600 Received by: Juliet Moke Date/Time 11/21/12 9:51  
Relinquished by: \_\_\_\_\_ Date/Time \_\_\_\_\_ Received by: \_\_\_\_\_ Date/Time \_\_\_\_\_  
Method of Shipment: Fed Ex Sample Condition on Receipt: \_\_\_\_\_  
Authorized by: [Signature] (Signature MUST accompany request!) Acceptable \_\_\_\_\_ Other: (Explain) \_\_\_\_\_

Friday  
Dec  
11/30/12

**Ship to:**

<b>Detroit Lab</b> 22345 Roethel Drive Novi, MI 48375 248.344.2652 800.806.5887 Fax: 248.344.2655	<b>Atlanta Lab</b> 3380 Chairstain Meadows Pkwy., Ste 300 Kennesaw, GA 30144 770.499.7500 800.252.9919 Fax: 770.499.7511	<b>Chicago Lab</b> 95 Oakwood Road Lake Zurich, IL 60047 888.576.7522 847.726.3320 Fax: 847.726.3323	<b>Canadian Clients</b> 1415 Javette Ave Windsor, ON N9X 1Z1
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Visit our Website: [www.us.bureauveritas.com/hse](http://www.us.bureauveritas.com/hse)



November 27, 2012

Wanda Davis  
E.I. DUPONT DE NEMOURS & CO., INC.  
URS - Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, DE 19713

Bureau Veritas Work Order No. 12111039

Reference: East Chicago, IN-IRM PROJECT

Dear Wanda Davis:

Bureau Veritas North America, Inc. received 2 samples on November 16, 2012 for the analyses presented in the following report.

Enclosed is a copy of the Chain-of-Custody record, acknowledging receipt of these samples. Please note that any unused portion of the samples will be discarded 30 days after the date of this report, unless you have requested otherwise.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Karen Coonan

Client Services Representative

Electronic signature authorized through password protection

**Bureau Veritas North America, Inc.**

*Health, Safety, and Environmental Services*

22345 Roethel Drive

Novi, MI 48375

Main: (248) 344.1770

Fax: (248) 344.2655

[www.us.bureauveritas.com](http://www.us.bureauveritas.com)



## CASE NARRATIVE

Date: 27-Nov-12

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**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.

**Project:** East Chicago, IN-IRM PROJECT

**Work Order No** 12111039

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The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.

Analytical Comments for Method PM10\_ME\_47MM, sample -001A: The results have not been blank corrected. Please note that a field blank should be submitted with each sample set.



BUREAU VERITAS

# ANALYTICAL RESULTS

Date: 11/27/2012

Client: E.I. DUPONT DE NEMOURS & CO., INC.

COC No.:

Work Order No: 12111039

Sample Identification ECH-090712-14

Lab Number: 001A

Date Collected: 11/14/2012

Sample Type: Quartz Filter

Date Received: 11/16/2012

Air Volume (L): 8040

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 11/26/2012

Analyst: Sud, R.

Batch ID: 53180

Mass Results

Air Concentration Results

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic		U	0.016	0.09000	µg/Filter		U	0.001990	0.01119	µg/m3
Cadmium	0.009100	J	0.0014	0.2000	µg/Filter	0.001132	J	0.0001741	0.02488	µg/m3
Lead	0.09610	J	0.0060	1.000	µg/Filter	0.01195	J	0.0007463	0.1244	µg/m3

Sample Identification ECH-090712-15

Lab Number: 002A

Date Collected: 11/15/2012

Sample Type: Quartz Filter

Date Received: 11/16/2012

Air Volume (L): 7860

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 11/26/2012

Analyst: Sud, R.

Batch ID: 53180

Mass Results

Air Concentration Results

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic		U	0.016	0.09000	µg/Filter		U	0.002036	0.01145	µg/m3
Cadmium	0.02950	J	0.0014	0.2000	µg/Filter	0.003753	J	0.0001781	0.02545	µg/m3
Lead	0.2417	J	0.0060	1.000	µg/Filter	0.03075	J	0.0007634	0.1272	µg/m3

Qualifiers: U - Not Detected at the MDL

B - Analyte detected in the associated Media Blank

J-Value is between the MDL and RL, estimated result

NA - Not Applicable



# ANALYTICAL RESULTS

Date: 27-Nov-12

Client: E.I. DUPONT DE NEMOURS & CO., INC.

Project: East Chicago, IN-IRM PROJECT

Sample Type: Quartz Filter

Work Order No: 12111039

Method Reference 40CFR50 Appendix J (Mod)

Date Received: 11/16/2012

RL ( $\mu\text{g}$ ): 100

Analyst: DDN

Lab No.	Sample Identification	Air Volume (liters)	PM10 Particulate Matter		Date Analyzed
			( $\mu\text{g}$ )	( $\text{ug}/\text{m}^3$ )	
001A	ECH-090712-14 11/14/12	8040	120	15	11/20/2012
002A	ECH-090712-15 11/15/12	7860	270	34	11/20/2012

General Notes:

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.

Back sections (if applicable) were checked and showed no significant breakthrough unless otherwise noted.



Bureau Veritas North America, Inc.

Date: 26-Nov-12

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12111039  
**Project:** East Chicago, IN-IRM PROJECT

**QC SUMMARY REPORT**  
 Method Blank

Sample ID: **MB-53180** Batch ID: **53180** Units: **µg/Filter** Analysis Date: **11/26/2012** Prep Date: **11/21/2012**  
 Client ID: Run ID: **ME\_VA2B\_121126A** SeqNo: **3263357**

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	ND										
Cadmium	0.0047										
Lead	0.0159										

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
 J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits



**BUREAU  
VERITAS**

**Bureau Veritas North America, Inc.**

**Date:** 26-Nov-12

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12111039  
**Project:** East Chicago, IN-IRM PROJECT

**QC SUMMARY REPORT**  
Laboratory Control Spike

**Sample ID:** LCS-53180      **Batch ID:** 53180      **Units:** µg/Filter      **Analysis Date:** 11/26/2012      **Prep Date:** 11/21/2012  
**Client ID:**      **Run ID:** ME\_VA2B\_121126A      **SeqNo:** 3263358

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.665	1.0	2	0	83.3	80	120				
Cadmium	1.817	1.0	2	0.0047	90.6	80	120				
Lead	1.917	1.0	2	0.0159	95.1	80	120				

**Qualifiers:** ND - Not Detected at the Reporting Limit  
J - Analyte detected below Reporting Limit

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank



Bureau Veritas North America, Inc.

Date: 26-Nov-12

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12111039  
**Project:** East Chicago, IN-IRM PROJECT

**QC SUMMARY REPORT**  
 Laboratory Control Spike Duplicate

Sample ID: LCSD Batch ID: 53180 Units: µg/Filter Analysis Date: 11/26/2012 Prep Date: 11/21/2012  
 Client ID: Run ID: ME\_VA2B\_121126A SeqNo: 3263361

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.79	1.0	2	0	89.5	80	120	1.665	7.24	20	
Cadmium	1.971	1.0	2	0.0047	98.3	80	120	1.817	8.13	20	
Lead	2.001	1.0	2	0.0159	99.2	80	120	1.917	4.27	20	

**Qualifiers:** ND - Not Detected at the Reporting Limit  
 J - Analyte detected below Reporting Limit

S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank



# Request for Laboratory Analytical Services

**IMPORTANT:** Data results required:  Yes  No  
 Rush charges authorized?  Yes  No  
 Fax or E-mail results  E-mail results

For Lab Use Only  
 Lab Project No. 12111039

E-mail Address:

## Bureau Veritas North America, Inc.

Report results to: Client Project Number: DuPont - East Chicago IRM Project Send Invoice to: P.O. No.  
 Name Wanda Davis - ADQM Name LBIO 65636  
 Company URS Corp. Company 9267-77201-WHO6507754  
 Mailing Address Iron Hill Corp. Center, Ogletown Rd., Ste 300 Address  
 City, State, Zip Newark, DE 19713 City, State, Zip  
 Telephone No. 302-781-5892 Fax No.

Special instructions and/or specific regulatory requirements:  
 (method, limit of detection, etc.)

Soil samples only: Which state are these from? \_\_\_\_\_  
 Water samples are: \_\_\_\_\_  
 Drinking water \_\_\_\_\_ Groundwater \_\_\_\_\_  
 Wastewater \_\_\_\_\_

Client Sample Identification	Date Sampled	Time Sampled	Matrix/Media	Air Volume (Liters)	# of Jars	ANALYSIS REQUESTED	
						(List each analyte on the lines below, multiple analytes per line)	
ECH-A-090712-14	11/14/12	7:55	Filter	8.04 m <sup>3</sup>	1	Metals (As, Cd, Pb); PM-10	
ECH-A-090712-15	11/15/12	7:40	Filter	7.8 m <sup>3</sup>	1	Metals (As, Cd, Pb); PM-10	

Collected by: Kathy Thompson Date/Time 11/15/12 1700 Collector's Signature: [Signature] Date/Time 11/16/12-15  
 Relinquished by: [Signature] Date/Time 11/15/12 1700 Received by: [Signature] Date/Time 11/16/12-15  
 Relinquished by: [Signature] Date/Time \_\_\_\_\_  
 Method of Shipment: F.I.D.E. Sample Condition on Receipt: Acceptable  
 Authorized by: [Signature] Other: (Explain) \_\_\_\_\_

**Ship to:**

<b>Detroit Lab</b> 22345 Roethel Drive Novi, MI 48375 248.344.2652 800.806.5897 Fax: 248.344.2655	<b>Atlanta Lab</b> 3380 Chestain Meadows Pkwy., Ste 300 Kennesaw, GA 30144 770.499.7500 800.252.9919 Fax: 770.459.7511	<b>Chicago Lab</b> 95 Oakwood Road Lake Zurich, IL 60047 888.576.7522 847.726.3320 Fax: 847.726.3323	<b>Canadian Clients</b> 1415 Janette Ave Windsor, ON N8X 1Z1  <b>Visit our Website:</b> <a href="http://www.lab.bureauveritas.com/na">www.lab.bureauveritas.com/na</a>
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November 15, 2012

Wanda Davis  
E.I. DUPONT DE NEMOURS & CO., INC.  
URS - Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, DE 19713

Bureau Veritas Work Order No. 12110666

Reference: East Chicago/IRM PROJECT

Dear Wanda Davis:

Bureau Veritas North America, Inc. received 2 samples on November 12, 2012 for the analyses presented in the following report.

Enclosed is a copy of the Chain-of-Custody record, acknowledging receipt of these samples. Please note that any unused portion of the samples will be discarded 30 days after the date of this report, unless you have requested otherwise.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Karen Coonan

Client Services Representative

Electronic signature authorized through password protection

**Bureau Veritas North America, Inc.**

*Health, Safety, and Environmental Services*

22345 Roethel Drive

Novi, MI 48375

Main: (248) 344.1770

Fax: (248) 344.2655

[www.us.bureauveritas.com](http://www.us.bureauveritas.com)



## CASE NARRATIVE

Date: 15-Nov-12

---

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.

**Project:** East Chicago/IRM PROJECT

**Work Order No** 12110666

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The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.

Analytical Comments for Method PM10\_ME\_47MM, sample -001A: The results have not been blank corrected. Please note that a field blank should be submitted with each sample set.



BUREAU  
VERITAS

# ANALYTICAL RESULTS

Date: 11/15/2012

Client: E.I. DUPONT DE NEMOURS & CO., INC.

COC No.:

Work Order No: 12110666

Sample Identification ECH-A-090712-12

Lab Number: 001A

Date Collected: 11/7/2012

Sample Type: Quartz Filter

Date Received: 11/12/2012

Air Volume (L): 7980

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 11/15/2012

Analyst: Sud, R.

Batch ID: 53067

### Mass Results

### Air Concentration Results

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic		U	0.016	0.09000	µg/Filter		U	0.002005	0.01128	µg/m3
Cadmium	0.02240	J	0.0014	0.2000	µg/Filter	0.002807	J	0.0001754	0.02506	µg/m3
Lead	0.2194	J	0.0060	1.000	µg/Filter	0.02749	J	0.0007519	0.1253	µg/m3

Sample Identification ECH-A-090712-13

Lab Number: 002A

Date Collected: 11/8/2012

Sample Type: Quartz Filter

Date Received: 11/12/2012

Air Volume (L): 8220

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 11/15/2012

Analyst: Sud, R.

Batch ID: 53067

### Mass Results

### Air Concentration Results

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic		U	0.016	0.09000	µg/Filter		U	0.001946	0.01095	µg/m3
Cadmium	0.009900	J	0.0014	0.2000	µg/Filter	0.001204	J	0.0001703	0.02433	µg/m3
Lead	0.2774	J	0.0060	1.000	µg/Filter	0.03375	J	0.0007299	0.1217	µg/m3

Qualifiers: U - Not Detected at the MDL

B - Analyte detected in the associated Media Blank

J-Value is between the MDL and RL, estimated result

NA - Not Applicable



# ANALYTICAL RESULTS

Date: 15-Nov-12

Client: E.I. DUPONT DE NEMOURS & CO., INC.

Project: East Chicago/IRM PROJECT

Sample Type: Quartz Filter

Work Order No: 12110666

Method Reference 40CFR50 Appendix J (Mod)

Date Received: 11/12/2012

RL ( $\mu\text{g}$ ): 100

Analyst: DDN

Lab No.	Sample Identification	Air Volume (liters)	PM10 Particulate Matter		Date Analyzed
			( $\mu\text{g}$ )	( $\text{ug}/\text{m}^3$ )	
001A	ECH-A-090712-12 11/07/12	7980	320	40	11/13/2012
002A	ECH-A-090712-13 11/08/12	8220	280	34	11/13/2012

General Notes:

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.

Back sections (if applicable) were checked and showed no significant breakthrough unless otherwise noted.



Bureau Veritas North America, Inc.

Date: 15-Nov-12

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12110666  
**Project:** East Chicago/TRM PROJECT

**QC SUMMARY REPORT**  
 Method Blank

Sample ID: **MB-53067** Batch ID: **53067** Units: **µg/Filter** Analysis Date: **11/15/2012** Prep Date: **11/13/2012**  
 Client ID: Run ID: **ME\_VA2B\_121115A** SeqNo: **3253589**

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	ND										
Cadmium	0.0058										
Lead	0.0136										

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
 J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits



Bureau Veritas North America, Inc.

Date: 15-Nov-12

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12110666  
**Project:** East Chicago/TRM PROJECT

**QC SUMMARY REPORT**  
 Laboratory Control Spike

Sample ID: **LCS-53067** Batch ID: **53067** Units: **µg/Filter** Analysis Date: **11/15/2012** Prep Date: **11/13/2012**  
 Client ID: Run ID: **ME\_VA2B\_121115A** SeqNo: **3253590**

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.637	1.0	2	0	81.8	80	120				
Cadmium	1.991	1.0	2	0.0058	99.2	80	120				
Lead	1.951	1.0	2	0.0136	96.9	80	120				

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
 J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits



Bureau Veritas North America, Inc.

Date: 15-Nov-12

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12110666  
**Project:** East Chicago/TRM PROJECT

**QC SUMMARY REPORT**  
 Laboratory Control Spike Duplicate

Sample ID: LCSD Batch ID: 53067 Units: µg/Filter Analysis Date: 11/15/2012 Prep Date: 11/13/2012  
 Client ID: Run ID: ME\_VA2B\_121115A SeqNo: 3253593

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.793	1.0	2	0	89.6	80	120	1.637	9.11	20	
Cadmium	2.079	1.0	2	0.0058	104	80	120	1.991	4.34	20	
Lead	2.074	1.0	2	0.0136	103	80	120	1.951	6.13	20	

**Qualifiers:** ND - Not Detected at the Reporting Limit  
 J - Analyte detected below Reporting Limit

S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank



# Request for Laboratory Analytical Services

For Lab Use Only  
Lab Project No.

12116666

**IMPORTANT:** Date results required: Yes  No   
Rush charges authorized? Yes  No   
E-mail results   
E-mail Address:

## Bureau Veritas North America, Inc.

Report results to: Wanda Davis - ADQM Client Project Number: DuPont - East Chicago IRM Project P.O. No. \_\_\_\_\_  
 Name Wanda Davis - ADQM  
 Company URS Corp.  
 Mailing Address Iron Hill Corp. Center, Oglethown Rd. Ste 300  
 City, State, Zip Newark, DE 19713  
 Telephone No. 302-781-5892 Fax No. \_\_\_\_\_

Send invoice to: LBIO 65636  
 Name 9267-77201-WHO6507754  
 Company \_\_\_\_\_  
 Address \_\_\_\_\_  
 City, State, Zip \_\_\_\_\_

Special instructions and/or specific regulatory requirements:  
(method, limit of detection, etc.)

Soil samples only: Which state are these from? \_\_\_\_\_  
 Water samples are: \_\_\_\_\_  
 Drinking water \_\_\_\_\_  
 Wastewater \_\_\_\_\_  
 Groundwater \_\_\_\_\_

Client Sample Identification	Date Sampled	Time Sampled	Matrix/Media	Air Volume (Liters)	# of Jars	ANALYSIS REQUESTED (List each analyte on the lines below, multiple analytes per line)
ECH-A-090712-12	11/7/12	8:05	Filter	7.98 m <sup>3</sup>	1	Metals (As, Cd, Pb); PM-10
ECH-A-090712-13	11/8/12	8:00	Filter	8.22 m <sup>3</sup>	1	Metals (As, Cd, Pb); PM-10

Collected by: Keith Thompson Date/Time 11/8/12 1800 Collector's Signature: [Signature] Date/Time 11/8/12 1800  
 Relinquished by: [Signature] Date/Time 11/8/12 1800 Received by: [Signature] Date/Time 11/8/12 10:52  
 Relinquished by: \_\_\_\_\_ Date/Time \_\_\_\_\_  
 Method of Shipment: Fed Ex Sample Condition on Receipt: \_\_\_\_\_  
 Authorized by: [Signature] Acceptable  Other: (Explain) \_\_\_\_\_

**Ship to:**

<b>Detroit Lab</b> 22345 Roethel Drive Novi, MI 48375 248.344.2652 800.806.5887 Fax: 248.344.2655	<b>Atlanta Lab</b> 3380 Chastain Meadows Pkwy., Ste 300 Kennesaw, GA 30144 770.499.7500 800.252.9919 Fax: 770.499.7511	<b>Chicago Lab</b> 96 Oakwood Road Lake Zurich, IL 60047 888.576.7522 847.726.3323 Fax: 847.726.3323	<b>Canadian Clients</b> 1415 Janelle Ave Windsor, ON N9X 1Z1  <b>Visit our Website:</b> <a href="http://www.us.bureauveritas.com/hse">www.us.bureauveritas.com/hse</a>
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November 08, 2012

Wanda Davis  
E.I. DUPONT DE NEMOURS & CO., INC.  
URS - Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, DE 19713

Bureau Veritas Work Order No. 12110133

Reference: East Chicago/IRM PROJECT

Dear Wanda Davis:

Bureau Veritas North America, Inc. received 1 sample on November 01, 2012 for the analyses presented in the following report.

Enclosed is a copy of the Chain-of-Custody record, acknowledging receipt of these samples. Please note that any unused portion of the samples will be discarded 30 days after the date of this report, unless you have requested otherwise.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Karen Coonan

Client Services Representative

Electronic signature authorized through password protection

**Bureau Veritas North America, Inc.**

*Health, Safety, and Environmental Services*

22345 Roethel Drive

Novi, MI 48375

Main: (248) 344.1770

Fax: (248) 344.2655

[www.us.bureauveritas.com](http://www.us.bureauveritas.com)



## CASE NARRATIVE

Date: 08-Nov-12

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**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.

**Project:** East Chicago/IRM PROJECT

**Work Order No** 12110133

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The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.

Analytical Comments for Method PM10\_ME\_47MM, sample -001A: The results have not been blank corrected. Please note that a field blank should be submitted with each sample set.



**BUREAU  
VERITAS**

# ANALYTICAL RESULTS

Date: 11/8/2012

Client: E.I. DUPONT DE NEMOURS & CO., INC.

COC No.:

Work Order No: 12110133

Sample Identification ECH-A-090712-11

Lab Number: 001A

Date Collected: 10/31/2012

Sample Type: Quartz Filter

Date Received: 11/1/2012

Air Volume (L): 8040

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 11/7/2012

Analyst: Sud, R.

Batch ID: 52981

### Mass Results

### Air Concentration Results

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic		U	0.016	0.09000	µg/Filter		U	0.001990	0.01119	µg/m3
Cadmium	0.01000	J	0.0014	0.2000	µg/Filter	0.001244	J	0.0001741	0.02488	µg/m3
Lead	2.258		0.0060	1.000	µg/Filter	0.2808		0.0007463	0.1244	µg/m3

Qualifiers: U - Not Detected at the MDL

B - Analyte detected in the associated Media Blank

J-Value is between the MDL and RL, estimated result

NA - Not Applicable



# ANALYTICAL RESULTS

Date: 08-Nov-12

Client: E.I. DUPONT DE NEMOURS & CO., INC.

Project: East Chicago/IRM PROJECT

Sample Type: Quartz Filter

Work Order No: 12110133

Method Reference 40CFR50 Appendix J (Mod)

Date Received: 11/1/2012

RL ( $\mu\text{g}$ ): 100

Analyst: DDN

Lab No.	Sample Identification	Air Volume (liters)	PM10 Particulate Matter		Date Analyzed
			( $\mu\text{g}$ )	( $\text{ug}/\text{m}^3$ )	
001A	ECH-A-090712-11 10/31/12	8040	120	15	11/05/2012

General Notes:

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.

Back sections (if applicable) were checked and showed no significant breakthrough unless otherwise noted.



Bureau Veritas North America, Inc.

Date: 08-Nov-12

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12110133  
**Project:** East Chicago/TRM PROJECT

**QC SUMMARY REPORT**  
 Method Blank

Sample ID: **MB-52981** Batch ID: **52981** Units: **µg/Filter** Analysis Date: **11/7/2012** Prep Date: **11/7/2012**  
 Client ID: Run ID: **ME\_VA2B\_121107C** SeqNo: **3244783**

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	ND										
Cadmium	ND										
Lead	ND										

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
 J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits



Bureau Veritas North America, Inc.

Date: 08-Nov-12

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12110133  
**Project:** East Chicago/TRM PROJECT

**QC SUMMARY REPORT**  
 Laboratory Control Spike

Sample ID: **LCS-52981** Batch ID: **52981** Units: **µg/Filter** Analysis Date: **11/7/2012** Prep Date: **11/7/2012**  
 Client ID: Run ID: **ME\_VA2B\_121107C** SeqNo: **3244784**

Analyte	Result 1	PQL	Spike Added	Unspiked		%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
				Sample	Result							
Arsenic	1.725	1.0	2	0	0	86.3	80	120				
Cadmium	1.766	1.0	2	0	0	88.3	80	120				
Lead	1.817	1.0	2	0	0	90.8	80	120				

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
 J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits



Bureau Veritas North America, Inc.

Date: 08-Nov-12

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.  
**Work Order:** 12110133  
**Project:** East Chicago/TRM PROJECT

**QC SUMMARY REPORT**  
 Laboratory Control Spike Duplicate

Sample ID: LCSD Batch ID: 52981 Units: µg/Filter Analysis Date: 11/7/2012 Prep Date: 11/7/2012  
 Client ID: Run ID: ME\_VA2B\_121107C SeqNo: 3244786

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.865	1.0	2	0	93.3	80	120	1.725	7.79	20	
Cadmium	2.083	1.0	2	0	104	80	120	1.766	16.5	20	
Lead	2.054	1.0	2	0	103	80	120	1.817	12.3	20	

**Qualifiers:** ND - Not Detected at the Reporting Limit  
 J - Analyte detected below Reporting Limit

S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank





November 02, 2012

Wanda Davis  
E.I. DUPONT DE NEMOURS & CO., INC.  
URS - Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, DE 19713

Bureau Veritas Work Order No. 12101751

Reference: East Chicago, IN-IRM PROJECT

Dear Wanda Davis:

Bureau Veritas North America, Inc. received 2 samples on October 26, 2012 for the analyses presented in the following report.

Enclosed is a copy of the Chain-of-Custody record, acknowledging receipt of these samples. Please note that any unused portion of the samples will be discarded 30 days after the date of this report, unless you have requested otherwise.

This material is confidential and is intended solely for the person to whom it is addressed. If this is received in error, please contact the number provided below.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (800) 806-5887.

Sincerely,

Karen Coonan

Client Services Representative

Electronic signature authorized through password protection

**Bureau Veritas North America, Inc.**

*Health, Safety, and Environmental Services*

22345 Roethel Drive

Novi, MI 48375

Main: (248) 344.1770

Fax: (248) 344.2655

[www.us.bureauveritas.com](http://www.us.bureauveritas.com)



## CASE NARRATIVE

Date: 02-Nov-12

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**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.

**Project:** East Chicago, IN-IRM PROJECT

**Work Order No** 12101751

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The results of this report relate only to the samples listed in the body of this report.

Unless otherwise noted below, the following statements apply: 1) all samples were received in acceptable condition, 2) all quality control results associated with this sample set were within acceptable limits and/or do not adversely affect the reported results, and 3) the industrial hygiene results have not been blank corrected.

Analytical Comments for Method PM10\_ME, sample -002A: Actual value of the particulate blank was 20ug; the results have been blank corrected.



# ANALYTICAL RESULTS

Date: 11/2/2012

Client: E.I. DUPONT DE NEMOURS & CO., INC.

COC No.:

Work Order No: 12101751

Sample Identification ECH-A-090712-9

Lab Number: 001A

Date Collected: 10/24/2012

Sample Type: Quartz Filter

Date Received: 10/26/2012

Air Volume (L): 7500

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 10/31/2012

Analyst: Sud, R.

Batch ID: 52903

### Mass Results

### Air Concentration Results

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic		U	0.016	0.09000	µg/Filter		U	0.002133	0.01200	µg/m3
Cadmium	0.009000	J	0.0014	0.2000	µg/Filter	0.001200	J	0.0001867	0.02667	µg/m3
Lead	0.3388	J	0.0060	1.000	µg/Filter	0.04517	J	0.0008000	0.1333	µg/m3

Sample Identification ECH-A-090712-10 BLANK

Lab Number: 002A

Date Collected: 10/25/2012

Sample Type: Quartz Filter

Date Received: 10/26/2012

Air Volume (L): NA

Analysis Method: Metals by EPA IO 3.5

Date Analyzed: 10/31/2012

Analyst: Sud, R.

Batch ID: 52903

### Mass Results

### Air Concentration Results

	Mass Results					Air Concentration Results				
	Results	Qual	MDL	RL	Units	Results	Qual	MDL	RL	Units
Arsenic		U	0.016	0.09000	µg/Filter		U	0.016	0.09	µg/Filter
Cadmium		U	0.0014	0.2000	µg/Filter		U	0.001	0.2	µg/Filter
Lead		U	0.0060	1.000	µg/Filter		U	0.006	1	µg/Filter

Qualifiers: U - Not Detected at the MDL

B - Analyte detected in the associated Media Blank

J-Value is between the MDL and RL, estimated result

NA - Not Applicable



## ANALYTICAL RESULTS

Date: 02-Nov-12

**Client:** E.I. DUPONT DE NEMOURS & CO., INC.

**Project:** East Chicago, IN-IRM PROJECT

**Sample Type:** Quartz Filter

**Work Order No:** 12101751

**Method Reference:** 40CFR50 Appendix J (Mod)

**Date Received:** 10/26/2012

**RL ( $\mu\text{g}$ ):** 100

**Analyst:** DDN

Lab No.	Sample Identification	Air Volume (liters)	PM10 Particulate Matter		Date Analyzed
			( $\mu\text{g}$ )	( $\text{ug}/\text{m}^3$ )	
001A	ECH-A-090712-9 10/24/12	7500	220	29	10/30/2012
002A	ECH-A-090712-10 BLANK 10/25/12	0	<100	--	10/30/2012

**General Notes:**

<: Less than the indicated reporting limit (RL).

--: Information not available or not applicable.

Back sections (if applicable) were checked and showed no significant breakthrough unless otherwise noted



BUREAU  
VERITAS

Bureau Veritas North America, Inc.

Date: 02-Nov-12

# QC SUMMARY REPORT

Method Blank

**CLIENT:** E.I. DUPONT DE NEMOURS & CO., INC.

**Work Order:** 12101751

**Project:** East Chicago, IN-IRM PROJECT

Sample ID: MIB-52903

Batch ID: 52903

Units: µg/Filter

Prep Date: 10/31/2012

Client ID:

Run ID: ME\_VA2B\_121031E

Analysis Date: 10/31/2012

SeqNo: 3236971

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	ND	1.0									
Cadmium	ND	1.0									
Lead	ND	1.0									

**Qualifiers:** ND - Not Detected at the Reporting Limit      S - Spike Recovery outside accepted recovery limits      B - Analyte detected in the associated Method Blank  
 J - Analyte detected below Reporting Limit      R - RPD outside accepted recovery limits



BUREAU  
VERITAS

Bureau Veritas North America, Inc.

Date: 02-Nov-12

CLIENT: E.I. DUPONT DE NEMOURS & CO., INC.

Work Order: 12101751

Project: East Chicago, IN-IRM PROJECT

## QC SUMMARY REPORT

Laboratory Control Spike

Sample ID: LCS-52903

Batch ID: 52903

Units: µg/Filter

Analysis Date: 10/31/2012

Prep Date: 10/31/2012

Client ID:

Run ID: ME\_VA2B\_121031E

SeqNo: 3236972

Analyte	Result 1	PQL	Spike Added	Unspiked		%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
				Sample Result	Sample Result							
Arsenic	1.699	1.0	2	0	0	85	80	120				
Cadmium	1.995	1.0	2	0	0	99.7	80	120				
Lead	2.074	1.0	2	0	0	104	80	120				

Qualifiers:

ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits

B - Analyte detected in the associated Method Blank

J - Analyte detected below Reporting Limit

R - RPD outside accepted recovery limits



BUREAU  
VERITAS

Bureau Veritas North America, Inc.

Date: 02-Nov-12

CLIENT: E.I. DUPONT DE NEMOURS & CO., INC.

Work Order: 12101751

Project: East Chicago, IN-IRM PROJECT

### QC SUMMARY REPORT

Laboratory Control Spike Duplicate

Sample ID: LCSD Batch ID: 52903 Units: µg/Filter Analysis Date: 10/31/2012 Prep Date: 10/31/2012  
Client ID: Run ID: ME\_VA2B\_121031E SeqNo: 3236975

Analyte	Result 1	PQL	Spike Added	Unspiked Sample Result	%REC	LowLimit	HighLimit	Result 2	%RPD	RPDLimit	Qual
Arsenic	1.701	1.0	2	0	85	80	120	1.699	0.106	20	
Cadmium	2.032	1.0	2	0	102	80	120	1.995	1.85	20	
Lead	2.162	1.0	2	0	108	80	120	2.074	4.15	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank  
 J - Analyte detected below Reporting Limit R - RPD outside accepted recovery limits



### PM Sampling - Field Data Log

Project: DuPont East Chicago  
 Sampling Date: 10/24/12 Page 1 of 1  
 Start - AirPres[mmHg]: 29.34 End - AirPres[mmHg]: 29.27  
 Start - AmbTemp[°F]: 66.8 End - AmbTemp[°F]: 79.3

For Data Entry Use:	
Project ID	
Filter ID	
Logged	
File Name	
Verified	

Site ID	Sampler Serial #	Filter No.	Start		End		Your Notes
			RotoFlow	ExpTime	RotoFlow	ExpTime	
Stackpile		090712-9	16.67 LPM	8:30	16.67 LPM	16:00	
		Filter Cmt: PM-10 Quartz, Wind South @ 5 kmph					
		Site Cmt: ~150' North of stackpile.					
		Filter Cmt: Site work stopped at 16:00. Sampler stopped					
		Site Cmt: at 16:00. Total run time: 449 mins					
		Filter Cmt: Total flow volume: 7.50 m <sup>3</sup>					
		Site Cmt:					
		Filter Cmt:					
		Site Cmt:					
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		Filter Cmt:					
		Site Cmt:					

### PM Sampling - Field Data Log

Project: DuPont EC  
 Sampling Date: 10/25/12 Page 1 of 1  
 Start - AtmPres[mmHg]: 29.18 End - AtmPres[mmHg]: 29.10  
 Start - AmbTemp[°C]: 67.4 End - AmbTemp[°C]: 76.2

**For Data Entry Use:**

Project ID \_\_\_\_\_  
 Filter ID \_\_\_\_\_  
 Logged \_\_\_\_\_  
 File Name \_\_\_\_\_  
 Verified \_\_\_\_\_

Site ID	Sampler Serial #	Filter No.	Start		End		Your Notes	
			RotoFlow	Stop Time	RotoFlow	Stop Time		
Stackpile		090712-10	—	8:00	—	16:00		
	Filter Cmt:	* Field Blank						
	Site Cmt:	ca 150' north of stackpile, wind southerly 6-7 mph						
	Filter Cmt:							
	Site Cmt:							
	Filter Cmt:							
	Site Cmt:							
	Filter Cmt:							
	Site Cmt:							
	Filter Cmt:							
	Site Cmt:							
	Filter Cmt:							
	Site Cmt:							
	Filter Cmt:							
	Site Cmt:							

**APPENDIX H  
BUFFER ZONE BORING LOGS**





DuPont East Chicago Facility  
5215 Kennedy Avenue  
East Chicago, IN

Supplemental Corrective  
Measures Study

Date Completed : 10/23/2012  
Total Depth Drilled : 2 ft  
Drilling Method : Hand Auger  
Logged by : Keith Thompson  
Drilled by : Parsons

Northing : 2321384.56884  
Easting : 2853757.83626  
Elevation : NA  
Coordinate System : IN State Plane West  
Datum : NAD83

Sampler Type : Hand Auger

Survey Contractor : Parsons  
Survey Date : 10/23/2012

Depth  
in  
Feet

Sample  
Identification

PID

Recovery (ft)

USCS

GRAPHIC

DESCRIPTION

0.0  
0.5  
1.0  
1.5  
2.0  
2.5  
3.0  
3.5  
4.0  
4.5  
5.0  
5.5  
6.0  
6.5  
7.0  
7.5  
8.0  
8.5  
9.0  
9.5  
10.0

ECH-S-IRM1-BFZ-32 (0-2)

0

PT



Topsoil with high organics, dark brown, moist.

SC



Fill, CLAYEY SAND, low plasticity, brown, dry.

SP



Fill, SAND with white powder material, fine grained, dry.

End of boring



DuPont East Chicago Facility  
5215 Kennedy Avenue  
East Chicago, IN

Supplemental Corrective  
Measures Study

Date Completed : 10/23/2012  
Total Depth Drilled : 2 ft  
Drilling Method : Hand Auger  
Logged by : Keith Thompson  
Drilled by : Parsons

Northing : 2320470.56399  
Easting : 2853957.18664  
Elevation : NA  
Coordinate System : IN State Plane West  
Datum : NAD83

Sampler Type : Hand Auger

Survey Contractor : Parsons  
Survey Date : 10/23/12

Depth  
in  
Feet

Sample  
Identification

PID

Recovery (ft)

USCS

GRAPHIC

DESCRIPTION

0.0	ECH-S-IRM1-BFZ-33 (0-2)	0				Fill, medium grained SAND and medium GRAVEL, dark brown, moist.
0.5				SW		
1.0						
1.5						
2.0						End of boring
2.5						
3.0						
3.5						
4.0						
4.5						
5.0						
5.5						
6.0						
6.5						
7.0						
7.5						
8.0						
8.5						
9.0						
9.5						
10.0						



DuPont East Chicago Facility  
5215 Kennedy Avenue  
East Chicago, IN

Supplemental Corrective  
Measures Study

Date Completed : 12/10/2012  
Total Depth Drilled : 2 ft  
Drilling Method : Hand Auger  
Logged by : Keith Thompson  
Drilled by : Parsons

Northing : 2320218.29115  
Easting : 2853865.91467  
Elevation : NA  
Coordinate System : IN State Plane West  
Datum : NAD83

Sampler Type : Hand Auger

Survey Contractor : Parsons  
Survey Date : 12/10/12

Depth  
in  
Feet

Sample  
Identification

PID

Recovery (ft)

USCS

GRAPHIC

DESCRIPTION

0.0  
0.5  
1.0  
1.5  
2.0  
2.5  
3.0  
3.5  
4.0  
4.5  
5.0  
5.5  
6.0  
6.5  
7.0  
7.5  
8.0  
8.5  
9.0  
9.5  
10.0

ECH-S-IRM1-BFZ-34 (0-2)

0

SM

SILTY SAND with high organics, gray, wet.

End of boring



DuPont East Chicago Facility  
5215 Kennedy Avenue  
East Chicago, IN

Supplemental Corrective  
Measures Study

Date Completed : 12/10/2012  
Total Depth Drilled : 2 ft  
Drilling Method : Hand Auger  
Logged by : Keith Thompson  
Drilled by : Parsons

Northing : 2320122.50485  
Easting : 2853798.09067  
Elevation : NA  
Coordinate System : IN State Plane West  
Datum : NAD83

Sampler Type : Hand Auger

Survey Contractor : Parsons  
Survey Date : 12/10/12

Depth  
in  
Feet

Sample  
Identification

PID

Recovery (ft)

USCS

GRAPHIC

DESCRIPTION

0.0	ECH-S-IRM1-BFZ-35 (0-2)	0		PT	Topsoil with high organics, black, moist.
0.5					SAND, gray, fine to medium grained, moist to wet.
1.0				SP	
1.5					
2.0					End of boring
2.5					
3.0					
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					
6.5					
7.0					
7.5					
8.0					
8.5					
9.0					
9.5					
10.0					



DuPont East Chicago Facility  
5215 Kennedy Avenue  
East Chicago, IN

Supplemental Corrective  
Measures Study

Date Completed : 12/10/2012  
Total Depth Drilled : 2 ft  
Drilling Method : Hand Auger  
Logged by : Keith Thompson  
Drilled by : Parsons

Northing : 2320058.69367  
Easting : 2853773.63004  
Elevation : NA  
Coordinate System : IN State Plane West  
Datum : NAD83

Sampler Type : Hand Auger

Survey Contractor : Parsons  
Survey Date : 12/10/12

Depth  
in  
Feet

Sample  
Identification

PID

Recovery (ft)

USCS

GRAPHIC

DESCRIPTION

0.0	ECH-S-IRM1-BFZ-36 (0-2)	0		PT		Topsoil with high organics, black, moist.
0.5						SAND, light-brown, fine to medium grained, dry to moist.
1.0				SP		
1.5						
2.0						End of boring
2.5						
3.0						
3.5						
4.0						
4.5						
5.0						
5.5						
6.0						
6.5						
7.0						
7.5						
8.0						
8.5						
9.0						
9.5						
10.0						



DuPont East Chicago Facility  
5215 Kennedy Avenue  
East Chicago, IN

Supplemental Corrective  
Measures Study

Date Completed : 10/23/2012  
Total Depth Drilled : 2 ft  
Drilling Method : Hand Auger  
Logged by : Keith Thompson  
Drilled by : Parsons

Northing : 2319818.34993  
Easting : 2853613.94666  
Elevation : NA  
Coordinate System : IN State Plane West  
Datum : NAD83

Sampler Type : Hand Auger

Survey Contractor : Parsons  
Survey Date : 10/23/12

Depth  
in  
Feet

Sample  
Identification

PID

Recovery (ft)

USCS

GRAPHIC

DESCRIPTION

0.0  
0.5  
1.0  
1.5  
2.0  
2.5  
3.0  
3.5  
4.0  
4.5  
5.0  
5.5  
6.0  
6.5  
7.0  
7.5  
8.0  
8.5  
9.0  
9.5  
10.0

ECH-S-IRM1-BFZ-37 (0-2)

0

SP

SAND, light-brown, medium grained, dry.

End of boring



DuPont East Chicago Facility  
5215 Kennedy Avenue  
East Chicago, IN

Supplemental Corrective  
Measures Study

Date Completed : 10/23/2012  
Total Depth Drilled : 2 ft  
Drilling Method : Hand Auger  
Logged by : Keith Thompson  
Drilled by : Parsons

Northing : 2319582.08453  
Easting : 2853493.32159  
Elevation : NA  
Coordinate System : IN State Plane West  
Datum : NAD83

Sampler Type : Hand Auger

Survey Contractor : Parsons  
Survey Date : 10/23/12

Depth  
in  
Feet

Sample  
Identification

PID

Recovery (ft)

USCS

GRAPHIC

DESCRIPTION

0.0  
0.5  
1.0  
1.5  
2.0  
2.5  
3.0  
3.5  
4.0  
4.5  
5.0  
5.5  
6.0  
6.5  
7.0  
7.5  
8.0  
8.5  
9.0  
9.5  
10.0

ECH-S-IRM1-BFZ-38 (0-2)

0

SP

SAND, light-brown, medium grained, dry.

End of boring



DuPont East Chicago Facility  
5215 Kennedy Avenue  
East Chicago, IN

Supplemental Corrective  
Measures Study

Date Completed : 10/23/2012  
Total Depth Drilled : 2 ft  
Drilling Method : Hand Auger  
Logged by : Keith Thompson  
Drilled by : Parsons

Northing : 2319308.25643  
Easting : 2853142.77055  
Elevation : NA  
Coordinate System : IN State Plane West  
Datum : NAD83

Sampler Type : Hand Auger

Survey Contractor : Parsons  
Survey Date : 10/23/12

Depth  
in  
Feet

Sample  
Identification

PID

Recovery (ft)

USCS

GRAPHIC

DESCRIPTION

0.0  
0.5  
1.0  
1.5  
2.0  
2.5  
3.0  
3.5  
4.0  
4.5  
5.0  
5.5  
6.0  
6.5  
7.0  
7.5  
8.0  
8.5  
9.0  
9.5  
10.0

ECH-S-IRM1-BFZ-39 (0-2)

0

SP

SAND, brown, fine to medium grained, moist.

End of boring



DuPont East Chicago Facility  
5215 Kennedy Avenue  
East Chicago, IN

Supplemental Corrective  
Measures Study

Date Completed : 10/23/2012  
Total Depth Drilled : 2 ft  
Drilling Method : Hand Auger  
Logged by : Keith Thompson  
Drilled by : Parsons

Northing : 2319212.96308  
Easting : 2853079.92576  
Elevation : NA  
Coordinate System : IN State Plane West  
Datum : NAD83

Sampler Type : Hand Auger

Survey Contractor : Parsons  
Survey Date : 10/23/12

Depth  
in  
Feet

Sample  
Identification

PID

Recovery (ft)

USCS

GRAPHIC

DESCRIPTION

0.0  
0.5  
1.0  
1.5  
2.0  
2.5  
3.0  
3.5  
4.0  
4.5  
5.0  
5.5  
6.0  
6.5  
7.0  
7.5  
8.0  
8.5  
9.0  
9.5  
10.0

ECH-S-IRM1-BFZ-40 (0-2)

0

SP

SAND, dark brown, fine to medium grained, moist.

End of boring



DuPont East Chicago Facility  
5215 Kennedy Avenue  
East Chicago, IN

Supplemental Corrective  
Measures Study

Date Completed : 10/24/2012  
Total Depth Drilled : 2 ft  
Drilling Method : Hand Auger  
Logged by : Keith Thompson  
Drilled by : Parsons

Northing : 2319127.31233  
Easting : 2852975.53558  
Elevation : NA  
Coordinate System : IN State Plane West  
Datum : NAD83

Sampler Type : Hand Auger

Survey Contractor : Parsons  
Survey Date : 10/24/12

Depth  
in  
Feet

Sample  
Identification

PID

Recovery (ft)

USCS

GRAPHIC

DESCRIPTION

0.0  
0.5  
1.0  
1.5  
2.0  
2.5  
3.0  
3.5  
4.0  
4.5  
5.0  
5.5  
6.0  
6.5  
7.0  
7.5  
8.0  
8.5  
9.0  
9.5  
10.0

ECH-S-IRM1-BFZ-41 (0-2)

0

SP

SAND, light-brown, medium grained, moist.

End of boring



DuPont East Chicago Facility  
5215 Kennedy Avenue  
East Chicago, IN

Supplemental Corrective  
Measures Study

Date Completed : 10/24/2012  
Total Depth Drilled : 2 ft  
Drilling Method : Hand Auger  
Logged by : Keith Thompson  
Drilled by : Parsons

Northing : 2319065.65184  
Easting : 2852797.60217  
Elevation : NA  
Coordinate System : IN State Plane West  
Datum : NAD83

Sampler Type : Hand Auger

Survey Contractor : Parsons  
Survey Date : 10/24/12

Depth  
in  
Feet

Sample  
Identification

PID

Recovery (ft)

USCS

GRAPHIC

DESCRIPTION

0.0

ECH-S-IRM1-BFZ-42 (0-2)

0

SC

SILTY SAND with some clay, high organics, brown, moist.

0.5

SAND, light-brown, fine to medium grained, wet.

1.0

SP

1.5

2.0

End of boring

2.5

3.0

3.5

4.0

4.5

5.0

5.5

6.0

6.5

7.0

7.5

8.0

8.5

9.0

9.5

10.0



DuPont East Chicago Facility  
5215 Kennedy Avenue  
East Chicago, IN

Supplemental Corrective  
Measures Study

Date Completed : 10/24/2012  
Total Depth Drilled : 2 ft  
Drilling Method : Hand Auger  
Logged by : Keith Thompson  
Drilled by : Parsons

Northing : 2318919.97257  
Easting : 2852618.45668  
Elevation : NA  
Coordinate System : IN State Plane West  
Datum : NAD83

Sampler Type : Hand Auger

Survey Contractor : Parsons  
Survey Date : 12/3/12

Depth  
in  
Feet

Sample  
Identification

PID

Recovery (ft)

USCS

GRAPHIC

DESCRIPTION

0.0	ECH-S-IRM1-BFZ-43 (0-2)	0				SILTY SAND with high organics, dark brown, moist.
0.5						SM
1.0						SC
1.5						
2.0	End of boring					
2.5						
3.0						
3.5						
4.0						
4.5						
5.0						
5.5						
6.0						
6.5						
7.0						
7.5						
8.0						
8.5						
9.0						
9.5						
10.0						



DuPont East Chicago Facility  
5215 Kennedy Avenue  
East Chicago, IN

Supplemental Corrective  
Measures Study

Date Completed : 10/24/2012  
Total Depth Drilled : 2 ft  
Drilling Method : Hand Auger  
Logged by : Keith Thompson  
Drilled by : Parsons

Northing : 2318798.06135  
Easting : 2852606.56866  
Elevation : NA  
Coordinate System : IN State Plane West  
Datum : NAD83

Sampler Type : Hand Auger

Survey Contractor : Parsons  
Survey Date : 10/24/12

Depth  
in  
Feet

Sample  
Identification

PID

Recovery (ft)

USCS

GRAPHIC

DESCRIPTION

0.0  
0.5  
1.0  
1.5  
2.0  
2.5  
3.0  
3.5  
4.0  
4.5  
5.0  
5.5  
6.0  
6.5  
7.0  
7.5  
8.0  
8.5  
9.0  
9.5  
10.0

ECH-S-IRM1-BFZ-44 (0-2)

0

SC

Fill, SILTY/CLAYEY SAND, brown, moist.

End of boring



DuPont East Chicago Facility  
5215 Kennedy Avenue  
East Chicago, IN

Supplemental Corrective  
Measures Study

Date Completed : 10/23/2012  
Total Depth Drilled : 2 ft  
Drilling Method : Hand Auger  
Logged by : Keith Thompson  
Drilled by : Parsons

Northing : 2318711.16880  
Easting : 2852414.68195  
Elevation : NA  
Coordinate System : IN State Plane West  
Datum : NAD83

Sampler Type : Hand Auger

Survey Contractor : Parsons  
Survey Date : 10/24/12

### DESCRIPTION

Depth  
in  
Feet

Sample  
Identification

PID

Recovery (ft)

USCS

GRAPHIC

0.0  
0.5  
1.0  
1.5  
2.0  
2.5  
3.0  
3.5  
4.0  
4.5  
5.0  
5.5  
6.0  
6.5  
7.0  
7.5  
8.0  
8.5  
9.0  
9.5  
10.0

ECH-S-IRM1-BFZ-45 (0-2)

0

SP

Fill, coarse grained SAND and medium GRAVEL with slag, brown, wet.

End of boring



DuPont East Chicago Facility  
5215 Kennedy Avenue  
East Chicago, IN

Supplemental Corrective  
Measures Study

Date Completed : 10/24/2012  
Total Depth Drilled : 2 ft  
Drilling Method : Hand Auger  
Logged by : Keith Thompson  
Drilled by : Parsons

Northing : 2318623.80479  
Easting : 2852293.27631  
Elevation : NA  
Coordinate System : IN State Plane West  
Datum : NAD83

Sampler Type : Hand Auger

Survey Contractor : Parsons  
Survey Date : 10/24/12

Depth  
in  
Feet

Sample  
Identification

PID

Recovery (ft)

USCS

GRAPHIC

DESCRIPTION

0.0

ECH-S-IRM1-BFZ-46 (0-2)

0

SP

Fill, coarse grained SAND and medium GRAVEL with some slag, brown, dry.

0.5

1.0

1.5

2.0

End of boring

2.5

3.0

3.5

4.0

4.5

5.0

5.5

6.0

6.5

7.0

7.5

8.0

8.5

9.0

9.5

10.0



DuPont East Chicago Facility  
5215 Kennedy Avenue  
East Chicago, IN

Supplemental Corrective  
Measures Study

Date Completed : 10/24/2012  
Total Depth Drilled : 2 ft  
Drilling Method : Hand Auger  
Logged by : Keith Thompson  
Drilled by : Parsons

Northing : 2321513.93589  
Easting : 2853783.91036  
Elevation : NA  
Coordinate System : IN State Plane West  
Datum : NAD83

Sampler Type : Hand Auger

Survey Contractor : Parsons  
Survey Date : 10/24/12

Depth  
in  
Feet

Sample  
Identification

PID

Recovery (ft)

USCS

GRAPHIC

DESCRIPTION

0.0

ECH-S-IRM1-BFZ-47 (0-2)

0

SM

SILTY SAND with high organics, brown, moist.

0.5

Gray/White powdery material, soft, wet.

1.0

1.5

SP

2.0

End of boring

2.5

3.0

3.5

4.0

4.5

5.0

5.5

6.0

6.5

7.0

7.5

8.0

8.5

9.0

9.5

10.0



DuPont East Chicago Facility  
5215 Kennedy Avenue  
East Chicago, IN

Supplemental Corrective  
Measures Study

Date Completed : 10/24/2012  
Total Depth Drilled : 2 ft  
Drilling Method : Hand Auger  
Logged by : Keith Thompson  
Drilled by : Parsons

Northing : 2321596.75961  
Easting : 2853735.71824  
Elevation : NA  
Coordinate System : IN State Plane West  
Datum : NAD83

Sampler Type : Hand Auger

Survey Contractor : Parsons  
Survey Date : 10/24/12

Depth  
in  
Feet

Sample  
Identification

PID

Recovery (ft)

USCS

GRAPHIC

DESCRIPTION

0.0	ECH-S-IRM1-BFZ-48 (0-2)	0		SM	█	SILTY SAND with high organics, brown, moist.
0.5						Gray/White powder material, soft, wet.
1.0				SP		
1.5				SW	█	SAND, brown, medium grained, wet.
2.0	End of boring					
2.5						
3.0						
3.5						
4.0						
4.5						
5.0						
5.5						
6.0						
6.5						
7.0						
7.5						
8.0						
8.5						
9.0						
9.5						
10.0						

**APPENDIX I  
WIND ROSE REPORTS**

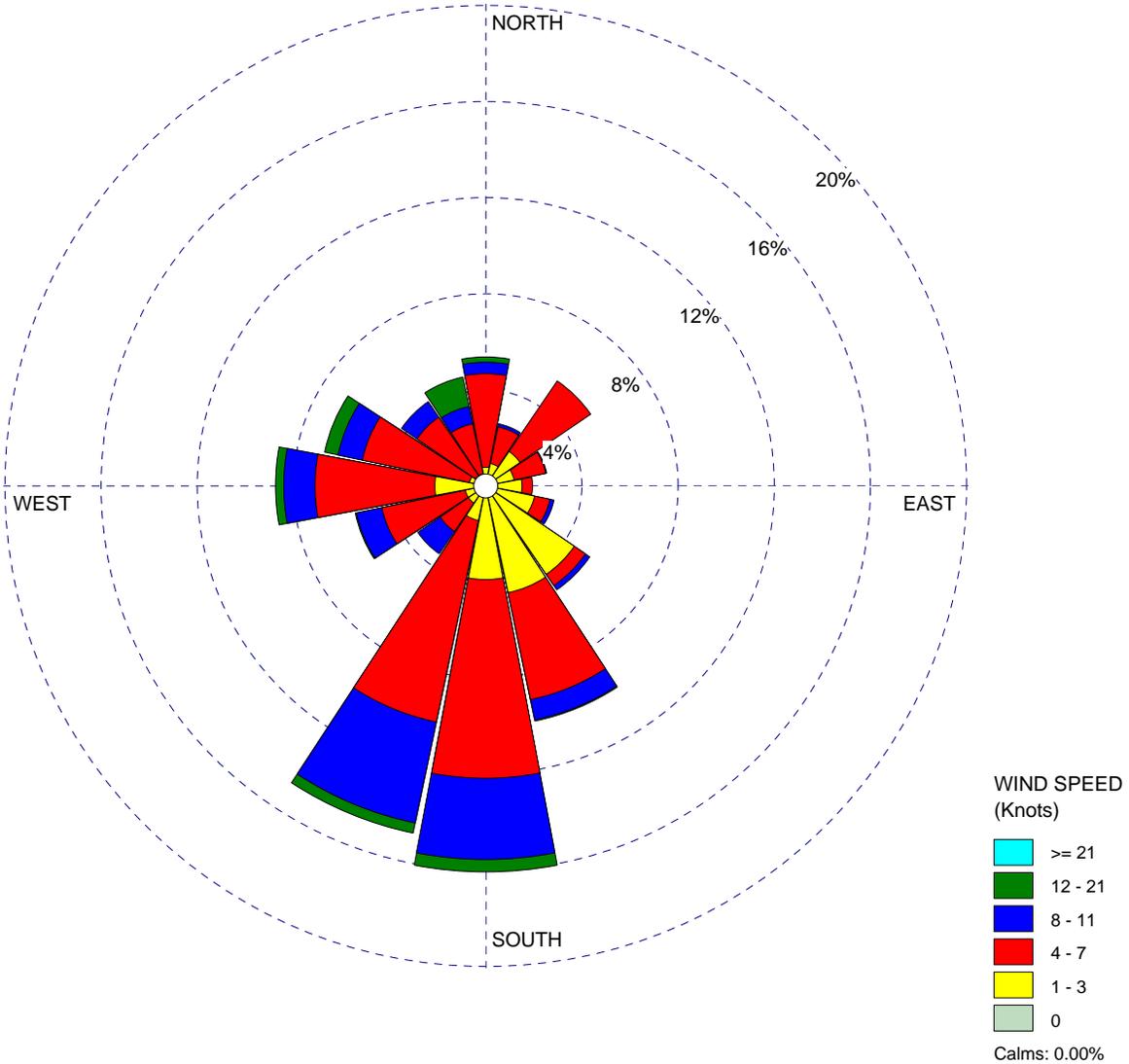


WIND ROSE PLOT:

**DuPont - East Chicago Site IRM  
September 12 - December 17, 2012 Wind Rose**

DISPLAY:

**Wind Speed  
Direction (blowing from)**



COMMENTS:

Meteorological data collected on-site during IRM excavations. Wind measured at approximately 10 feet above grade in an openly exposed area.

DATA PERIOD:

**Start Date: 9/12/2012 - 00:00  
End Date: 12/17/2012 - 14:00**

COMPANY NAME:

**Parsons**

MODELER:

**Pacheco**

CALM WINDS:

**0.00%**

TOTAL COUNT:

**2315 hrs.**

AVG. WIND SPEED:

**5.29 Knots**

DATE:

**2/7/2013**

PROJECT NO.:

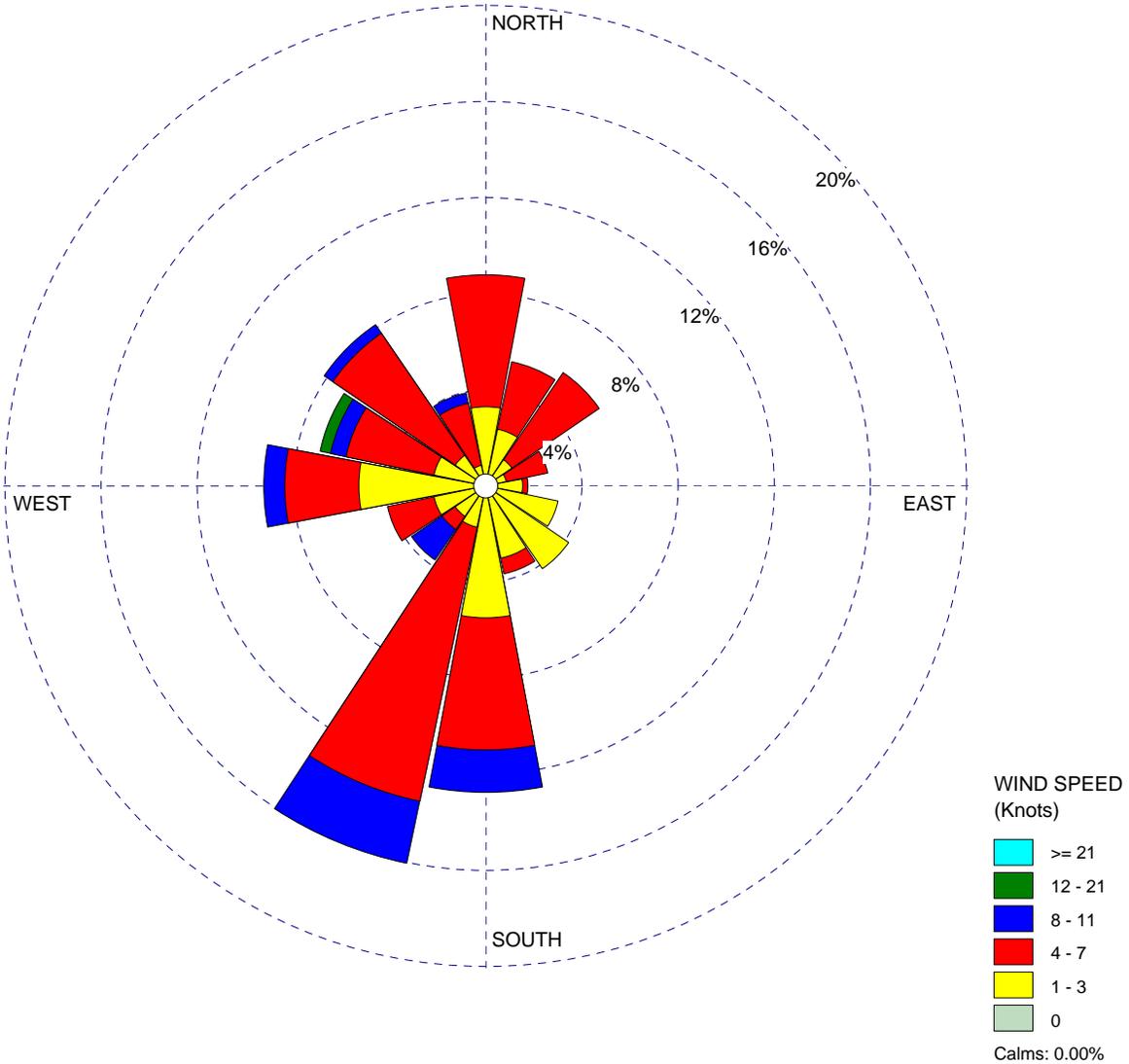
**446868-06000**

WIND ROSE PLOT:

**DuPont - East Chicago Site IRM  
September 12-30, 2012 Wind Rose**

DISPLAY:

**Wind Speed  
Direction (blowing from)**



COMMENTS:

Meteorological data collected on-site during IRM excavations. Wind measured at approximately 10 feet above grade in an openly exposed area.

DATA PERIOD:

**Start Date: 9/12/2012 - 00:00  
End Date: 9/30/2012 - 23:00**

COMPANY NAME:

**Parsons**

MODELER:

**Pacheco**

CALM WINDS:

**0.00%**

TOTAL COUNT:

**456 hrs.**

AVG. WIND SPEED:

**4.27 Knots**

DATE:

**2/7/2013**

PROJECT NO.:

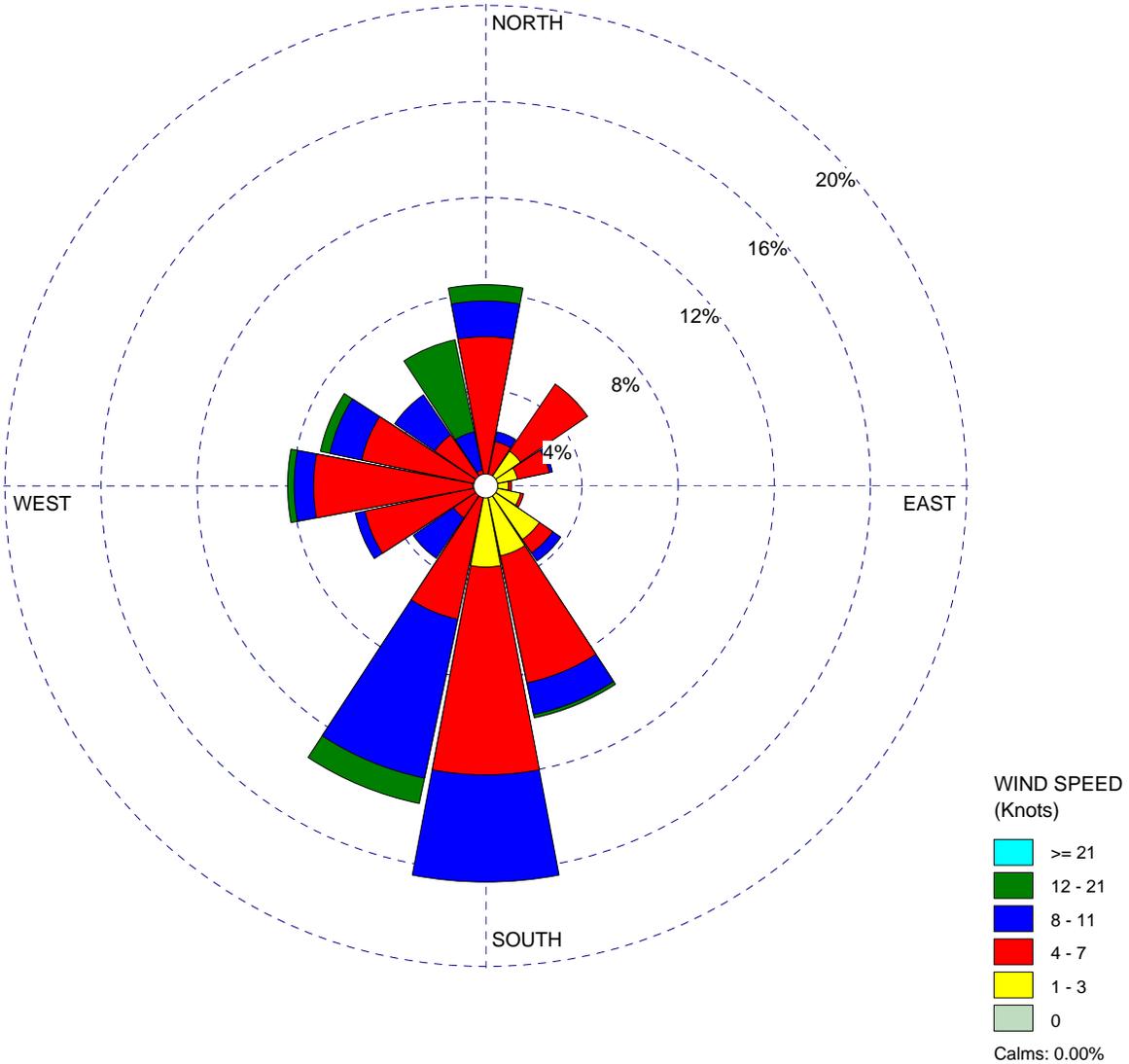
**446868-06000**

WIND ROSE PLOT:

**DuPont - East Chicago Site IRM  
October 1-31, 2012 Wind Rose**

DISPLAY:

**Wind Speed  
Direction (blowing from)**



COMMENTS:

Meteorological data collected on-site during IRM excavations. Wind measured at approximately 10 feet above grade in an openly exposed area.

DATA PERIOD:

**Start Date: 10/1/2012 - 00:00  
End Date: 10/31/2012 - 23:00**

COMPANY NAME:

**Parsons**

MODELER:

**Pacheco**

CALM WINDS:

**0.00%**

TOTAL COUNT:

**742 hrs.**

AVG. WIND SPEED:

**6.35 Knots**

DATE:

**2/7/2013**

PROJECT NO.:

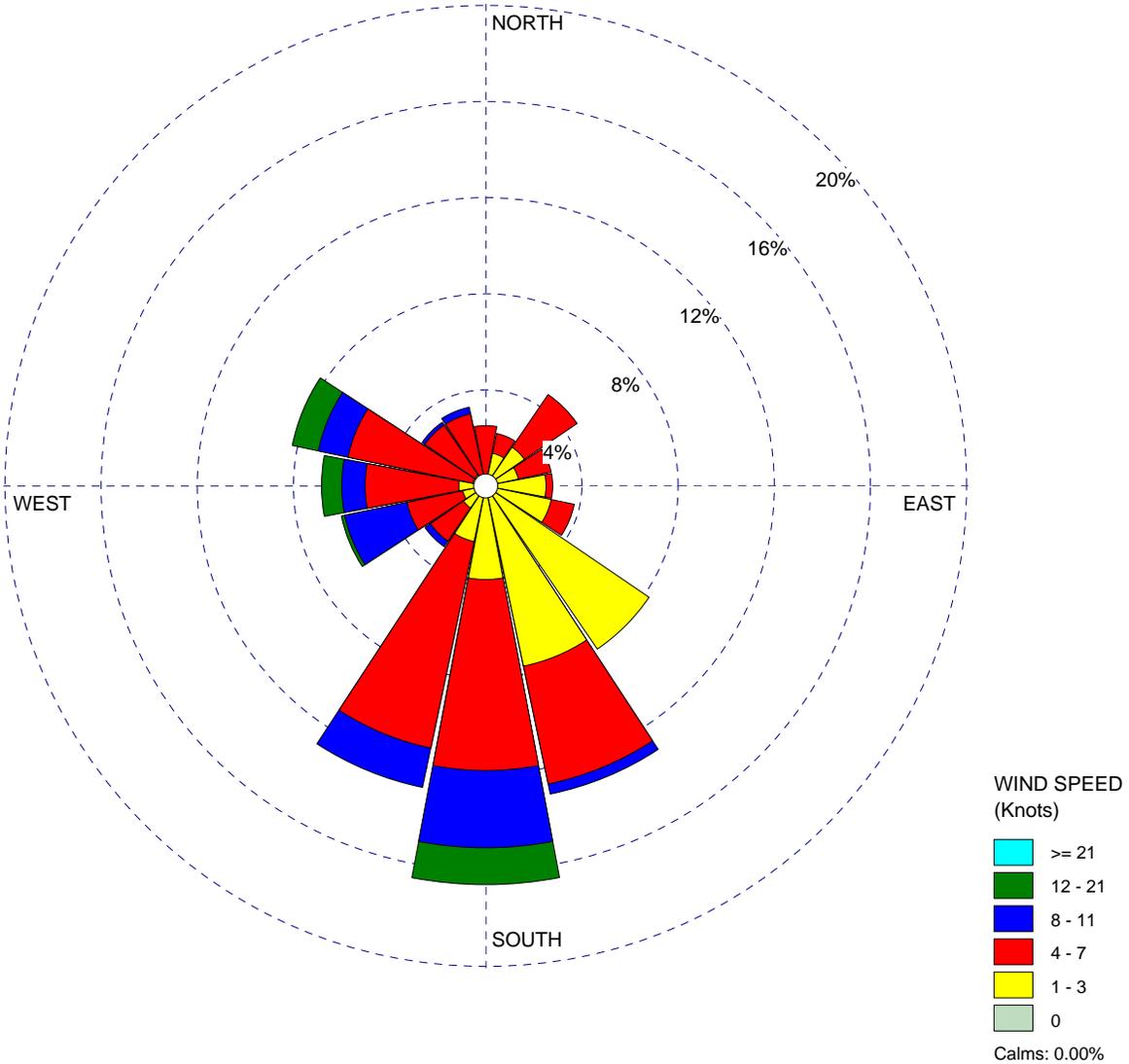
**446868-06000**

WIND ROSE PLOT:

**DuPont - East Chicago Site IRM  
November 1-30, 2012 Wind Rose**

DISPLAY:

**Wind Speed  
Direction (blowing from)**



COMMENTS:

Meteorological data collected on-site during IRM excavations. Wind measured at approximately 10 feet above grade in an openly exposed area.

DATA PERIOD:

**Start Date: 11/1/2012 - 00:00  
End Date: 11/30/2012 - 23:00**

COMPANY NAME:

**Parsons**

MODELER:

**Pacheco**

CALM WINDS:

**0.00%**

TOTAL COUNT:

**719 hrs.**

AVG. WIND SPEED:

**4.67 Knots**

DATE:

**2/7/2013**

PROJECT NO.:

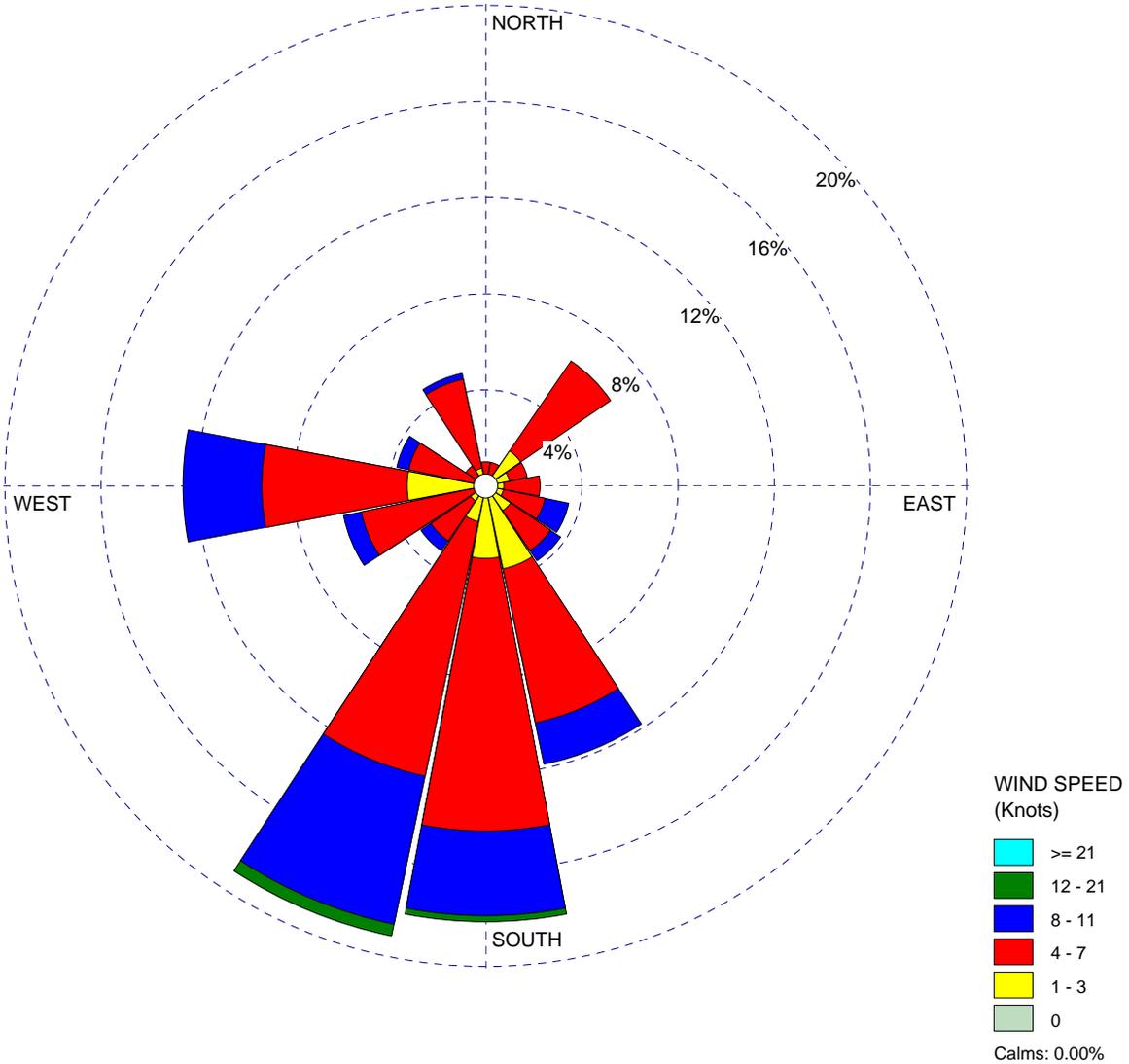
**446868-06000**

WIND ROSE PLOT:

**DuPont - East Chicago Site IRM  
December 1-17, 2012 Wind Rose**

DISPLAY:

**Wind Speed  
Direction (blowing from)**



COMMENTS:

Meteorological data collected on-site during IRM excavations. Wind measured at approximately 10 feet above grade in an openly exposed area.

DATA PERIOD:

**Start Date: 12/1/2012 - 00:00  
End Date: 12/17/2012 - 14:00**

COMPANY NAME:

**Parsons**

MODELER:

**Pacheco**

CALM WINDS:

**0.00%**

TOTAL COUNT:

**398 hrs.**

AVG. WIND SPEED:

**5.60 Knots**

DATE:

**2/7/2013**

PROJECT NO.:

**446868-06000**

**APPENDIX J**  
**BACKFILL SOIL ANALYTICAL REPORT**



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

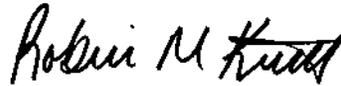
## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Valparaiso  
2400 Cumberland Drive  
Valparaiso, IN 46383  
Tel: (219)464-2389

TestAmerica Job ID: 510-84719-2  
Client Project/Site: Summit  
Revision: 1

For:  
Cardno ATC  
2224 Industrial Drive  
Suite A  
Highland, Indiana 46322

Attn: Brian Gerike



Authorized for release by:  
10/30/2012 12:32:09 PM

Robin Kintz  
Customer Service Manager  
[robinm.kintz@testamericainc.com](mailto:robinm.kintz@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

1

2

3

4

5

6

7

8

9

10

11

12

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# Definitions/Glossary

Client: Cardno ATC  
Project/Site: Summit

TestAmerica Job ID: 510-84719-2

## Qualifiers

### GC Semi VOA

Qualifier	Qualifier Description
F	MS or MSD exceeds the control limits

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Case Narrative

Client: Cardno ATC  
Project/Site: Summit

TestAmerica Job ID: 510-84719-2

**Job ID: 510-84719-2**

**Laboratory: TestAmerica Valparaiso**

## Narrative

**Job Narrative**  
**510-84719-2**

### Comments

The final report was revised because the 6010 metals were not included in the original report..

### Receipt

The samples were received on 10/16/2012 4:49 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.8° C.

### GC/MS VOA

No analytical or quality issues were noted.

### GC/MS Semi VOA

No analytical or quality issues were noted.

### GC Semi VOA

Method(s) 8081A, 8081B: The continuing calibration verification (CCV) associated with batch 167120 recovered above the upper control limit. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. 3604 (510-84719-2)

Method(s) 8081A: The following sample(s) were diluted due to the abundance of non-target analytes: 3604 (510-84719-2). Elevated reporting limits (RLs) are provided.

No other analytical or quality issues were noted.

### Metals

No analytical or quality issues were noted.

### General Chemistry

No analytical or quality issues were noted.

### Organic Prep

No analytical or quality issues were noted.

# Client Sample Results

Client: Cardno ATC  
Project/Site: Summit

TestAmerica Job ID: 510-84719-2

**Client Sample ID: 3604**

**Lab Sample ID: 510-84719-2**

**Date Collected: 10/16/12 14:28**

**Matrix: Solid**

**Date Received: 10/16/12 16:49**

**Percent Solids: 93.3**

**Method: 8260B - Volatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<0.012		0.012		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Benzene	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Dichlorobromomethane	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Bromoform	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Bromomethane	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
2-Butanone (MEK)	<0.012		0.012		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Carbon disulfide	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Carbon tetrachloride	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Chlorodibromomethane	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Chlorobenzene	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Chloroethane	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Chloroform	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Chloromethane	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Cyclohexane	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
1,1-Dichloroethane	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
1,2-Dichloroethane	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
1,1-Dichloroethene	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
cis-1,2-Dichloroethene	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
trans-1,2-Dichloroethene	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
trans-1,3-Dichloropropene	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
cis-1,3-Dichloropropene	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
1,2-Dichloropropane	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Ethylbenzene	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
2-Hexanone	<0.012		0.012		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Methyl acetate	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Methylene Chloride	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Methylcyclohexane	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Methyl tert-butyl ether	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Styrene	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
1,1,1-Trichloroethane	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
1,1,2-Trichloroethane	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Trichloroethene	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Trichlorofluoromethane	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Vinyl acetate	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Vinyl chloride	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Xylenes, Total	<0.012		0.012		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Toluene	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Tetrachloroethene	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
Isopropylbenzene	<0.0062		0.0062		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1
methyl isobutyl ketone	<0.012		0.012		mg/Kg	☼	10/21/12 08:59	10/21/12 13:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	124		73 - 146	10/21/12 08:59	10/21/12 13:40	1
4-Bromofluorobenzene (Surr)	98		68 - 140	10/21/12 08:59	10/21/12 13:40	1
Toluene-d8 (Surr)	102		73 - 127	10/21/12 08:59	10/21/12 13:40	1
Dibromofluoromethane	107		74 - 132	10/21/12 08:59	10/21/12 13:40	1

**Method: 8270C SIM - PAHs by GCMS (SIM)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<20		20		ug/Kg		10/17/12 09:32	10/17/12 18:28	1
Acenaphthylene	<20		20		ug/Kg		10/17/12 09:32	10/17/12 18:28	1

# Client Sample Results

Client: Cardno ATC  
Project/Site: Summit

TestAmerica Job ID: 510-84719-2

**Client Sample ID: 3604**

**Lab Sample ID: 510-84719-2**

**Date Collected: 10/16/12 14:28**

**Matrix: Solid**

**Date Received: 10/16/12 16:49**

**Method: 8270C SIM - PAHs by GCMS (SIM) (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Anthracene	<20		20		ug/Kg		10/17/12 09:32	10/17/12 18:28	1
Benzo[a]anthracene	<20		20		ug/Kg		10/17/12 09:32	10/17/12 18:28	1
Benzo[a]pyrene	<20		20		ug/Kg		10/17/12 09:32	10/17/12 18:28	1
Benzo[b]fluoranthene	<20		20		ug/Kg		10/17/12 09:32	10/17/12 18:28	1
Benzo[g,h,i]perylene	<20		20		ug/Kg		10/17/12 09:32	10/17/12 18:28	1
Benzo[k]fluoranthene	<20		20		ug/Kg		10/17/12 09:32	10/17/12 18:28	1
Chrysene	<20		20		ug/Kg		10/17/12 09:32	10/17/12 18:28	1
Dibenz(a,h)anthracene	<20		20		ug/Kg		10/17/12 09:32	10/17/12 18:28	1
Fluoranthene	<20		20		ug/Kg		10/17/12 09:32	10/17/12 18:28	1
Fluorene	<20		20		ug/Kg		10/17/12 09:32	10/17/12 18:28	1
Indeno[1,2,3-cd]pyrene	<20		20		ug/Kg		10/17/12 09:32	10/17/12 18:28	1
Naphthalene	<20		20		ug/Kg		10/17/12 09:32	10/17/12 18:28	1
Phenanthrene	<20		20		ug/Kg		10/17/12 09:32	10/17/12 18:28	1
Pyrene	<20		20		ug/Kg		10/17/12 09:32	10/17/12 18:28	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	60		17 - 120				10/17/12 09:32	10/17/12 18:28	1
2-Fluorobiphenyl	61		19 - 120				10/17/12 09:32	10/17/12 18:28	1
Terphenyl-d14	111		10 - 200				10/17/12 09:32	10/17/12 18:28	1

**Method: 8270C - Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Butyl benzyl phthalate	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
Bis(2-chloroethoxy)methane	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
Bis(2-chloroethyl)ether	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
Bis(2-ethylhexyl) phthalate	<700		700		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
4-Bromophenyl phenyl ether	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
Carbazole	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
4-Chloroaniline	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
2-Chloronaphthalene	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
4-Chlorophenyl phenyl ether	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
Dibenzofuran	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
1,2-Dichlorobenzene	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
1,3-Dichlorobenzene	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
1,4-Dichlorobenzene	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
3,3'-Dichlorobenzidine	<700		700		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
Diethyl phthalate	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
Dimethyl phthalate	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
Di-n-butyl phthalate	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
Di-n-octyl phthalate	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
2,4-Dinitrotoluene	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
2,6-Dinitrotoluene	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
Hexachlorobenzene	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
Hexachlorobutadiene	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
Hexachlorocyclopentadiene	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
Hexachloroethane	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
Isophorone	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
2-Methylnaphthalene	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
2-Nitroaniline	<700		700		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
3-Nitroaniline	<700		700		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
4-Nitroaniline	<700		700		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1

# Client Sample Results

Client: Cardno ATC  
Project/Site: Summit

TestAmerica Job ID: 510-84719-2

**Client Sample ID: 3604**

**Lab Sample ID: 510-84719-2**

**Date Collected: 10/16/12 14:28**

**Matrix: Solid**

**Date Received: 10/16/12 16:49**

**Percent Solids: 93.3**

**Method: 8270C - Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS) (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrobenzene	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
N-Nitrosodimethylamine	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
N-Nitrosodi-n-propylamine	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
N-Nitrosodiphenylamine	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
1,2,4-Trichlorobenzene	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
4-Chloro-3-methylphenol	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
2-Chlorophenol	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
2,4-Dichlorophenol	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
2,4-Dimethylphenol	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
2,4-Dinitrophenol	<1800		1800		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
4,6-Dinitro-2-methylphenol	<700		700		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
2-Methylphenol	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
3 & 4 Methylphenol	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
2-Nitrophenol	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
4-Nitrophenol	<1800		1800		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
Pentachlorophenol	<700		700		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
Phenol	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
2,4,5-Trichlorophenol	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
2,4,6-Trichlorophenol	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
Benzyl alcohol	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1
bis(1-chloroisopropyl)ether	<350		350		ug/Kg	☼	10/17/12 09:32	10/18/12 15:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	78		10 - 130	10/17/12 09:32	10/18/12 15:11	1
Phenol-d5	67		10 - 120	10/17/12 09:32	10/18/12 15:11	1
Nitrobenzene-d5	74		10 - 120	10/17/12 09:32	10/18/12 15:11	1
2-Fluorophenol	57		10 - 120	10/17/12 09:32	10/18/12 15:11	1
2-Fluorobiphenyl	66		12 - 120	10/17/12 09:32	10/18/12 15:11	1
2,4,6-Tribromophenol	68		10 - 134	10/17/12 09:32	10/18/12 15:11	1

**Method: 8081A - Organochlorine Pesticides (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	<18		18		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
beta-BHC	<18		18		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
delta-BHC	<18		18		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
gamma-BHC (Lindane)	<18		18		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
Heptachlor	<18		18		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
Aldrin	<18		18		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
Heptachlor epoxide	<18		18		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
Endosulfan I	<18		18		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
Dieldrin	<18		18		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
4,4'-DDE	<18		18		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
Endrin	<18		18		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
Endosulfan II	<18		18		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
4,4'-DDD	<18		18		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
Endosulfan sulfate	<18		18		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
4,4'-DDT	<18		18		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
Methoxychlor	<86		86		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
Endrin ketone	<18		18		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
Endrin aldehyde	<18		18		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
alpha-Chlordane	<18		18		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10

# Client Sample Results

Client: Cardno ATC  
Project/Site: Summit

TestAmerica Job ID: 510-84719-2

**Client Sample ID: 3604**

**Lab Sample ID: 510-84719-2**

Date Collected: 10/16/12 14:28

Matrix: Solid

Date Received: 10/16/12 16:49

Percent Solids: 93.3

**Method: 8081A - Organochlorine Pesticides (GC) (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-Chlordane	<18		18		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
Toxaphene	<170		170		ug/Kg	☼	10/22/12 19:42	10/25/12 00:56	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	117		53 - 142				10/22/12 19:42	10/25/12 00:56	10
Tetrachloro-m-xylene	84		43 - 122				10/22/12 19:42	10/25/12 00:56	10

**Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	<0.021		0.021		mg/Kg	☼	10/19/12 09:37	10/19/12 16:21	1
PCB-1221	<0.021		0.021		mg/Kg	☼	10/19/12 09:37	10/19/12 16:21	1
PCB-1232	<0.021		0.021		mg/Kg	☼	10/19/12 09:37	10/19/12 16:21	1
PCB-1242	<0.021		0.021		mg/Kg	☼	10/19/12 09:37	10/19/12 16:21	1
PCB-1248	<0.021		0.021		mg/Kg	☼	10/19/12 09:37	10/19/12 16:21	1
PCB-1254	<0.021		0.021		mg/Kg	☼	10/19/12 09:37	10/19/12 16:21	1
PCB-1260	<0.021		0.021		mg/Kg	☼	10/19/12 09:37	10/19/12 16:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	64		10 - 164				10/19/12 09:37	10/19/12 16:21	1
Dibutylchloredate	39		10 - 127				10/19/12 09:37	10/19/12 16:21	1

**Method: 8151A - Herbicides (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenoxyacetic acid	<350		350		ug/Kg	☼	10/18/12 13:43	10/20/12 20:06	10
Pentachlorophenol	<170		170		ug/Kg	☼	10/18/12 13:43	10/20/12 20:06	10
2,4,5-Trichlorophenoxyacetic acid	<350		350		ug/Kg	☼	10/18/12 13:43	10/20/12 20:06	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCAA	60		32 - 122				10/18/12 13:43	10/20/12 20:06	10

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.3		1.0		mg/Kg	☼	10/19/12 09:15	10/20/12 14:09	1
Barium	9.3		1.0		mg/Kg	☼	10/19/12 09:15	10/20/12 14:09	1
Cadmium	<0.21		0.21		mg/Kg	☼	10/19/12 09:15	10/20/12 14:09	1
Chromium	4.5		1.0		mg/Kg	☼	10/19/12 09:15	10/20/12 14:09	1
Lead	5.8		0.52		mg/Kg	☼	10/19/12 09:15	10/20/12 14:09	1
Selenium	<1.0		1.0		mg/Kg	☼	10/19/12 09:15	10/20/12 14:09	1
Silver	<0.52		0.52		mg/Kg	☼	10/19/12 09:15	10/20/12 14:09	1

**Method: 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.021		0.021		mg/Kg	☼	10/18/12 14:19	10/19/12 10:33	1

**General Chemistry**

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	6.7		0.10		%			10/16/12 18:00	1
Percent Solids	93		0.10		%			10/16/12 18:00	1

# QC Sample Results

Client: Cardno ATC  
Project/Site: Summit

TestAmerica Job ID: 510-84719-2

## Method: 8260B - Volatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 510-105694/5**

**Matrix: Solid**

**Analysis Batch: 105694**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<0.010		0.010		mg/Kg			10/21/12 08:13	1
Benzene	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Dichlorobromomethane	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Bromoform	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Bromomethane	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
2-Butanone (MEK)	<0.010		0.010		mg/Kg			10/21/12 08:13	1
Carbon disulfide	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Carbon tetrachloride	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Chlorodibromomethane	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Chlorobenzene	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Chloroethane	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Chloroform	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Chloromethane	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Cyclohexane	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
1,1-Dichloroethane	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
1,2-Dichloroethane	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
1,1-Dichloroethene	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
cis-1,2-Dichloroethene	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
trans-1,2-Dichloroethene	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
trans-1,3-Dichloropropene	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
cis-1,3-Dichloropropene	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
1,2-Dichloropropane	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Ethylbenzene	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
2-Hexanone	<0.010		0.010		mg/Kg			10/21/12 08:13	1
Methyl acetate	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Methylene Chloride	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Methylcyclohexane	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Methyl tert-butyl ether	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Styrene	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
1,1,1-Trichloroethane	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
1,1,2-Trichloroethane	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Trichloroethene	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Trichlorofluoromethane	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Vinyl acetate	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Vinyl chloride	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Xylenes, Total	<0.010		0.010		mg/Kg			10/21/12 08:13	1
Toluene	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Tetrachloroethene	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
Isopropylbenzene	<0.0050		0.0050		mg/Kg			10/21/12 08:13	1
methyl isobutyl ketone	<0.010		0.010		mg/Kg			10/21/12 08:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		73 - 146		10/21/12 08:13	1
4-Bromofluorobenzene (Surr)	99		68 - 140		10/21/12 08:13	1
Toluene-d8 (Surr)	101		73 - 127		10/21/12 08:13	1
Dibromofluoromethane	104		74 - 132		10/21/12 08:13	1

# QC Sample Results

Client: Cardno ATC  
Project/Site: Summit

TestAmerica Job ID: 510-84719-2

## Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: LCS 510-105694/3**

**Matrix: Solid**

**Analysis Batch: 105694**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	0.0500	0.0427		mg/Kg		85	10 - 200
Benzene	0.0500	0.0426		mg/Kg		85	73 - 137
Dichlorobromomethane	0.0500	0.0436		mg/Kg		87	71 - 126
Bromoform	0.0500	0.0497		mg/Kg		99	61 - 132
Bromomethane	0.0500	0.0430		mg/Kg		86	33 - 185
2-Butanone (MEK)	0.0500	0.0415		mg/Kg		83	29 - 200
Carbon disulfide	0.0500	0.0350		mg/Kg		70	60 - 143
Carbon tetrachloride	0.0500	0.0396		mg/Kg		79	72 - 136
Chlorodibromomethane	0.0500	0.0446		mg/Kg		89	68 - 131
Chlorobenzene	0.0500	0.0417		mg/Kg		83	74 - 130
Chloroethane	0.0500	0.0429		mg/Kg		86	44 - 159
Chloroform	0.0500	0.0414		mg/Kg		83	69 - 129
Chloromethane	0.0500	0.0391		mg/Kg		78	41 - 176
Cyclohexane	0.0500	0.0399		mg/Kg		80	66 - 136
1,1-Dichloroethane	0.0500	0.0362		mg/Kg		72	57 - 121
1,2-Dichloroethane	0.0500	0.0424		mg/Kg		85	68 - 129
1,1-Dichloroethene	0.0500	0.0374		mg/Kg		75	66 - 136
cis-1,2-Dichloroethene	0.0500	0.0386		mg/Kg		77	64 - 136
trans-1,2-Dichloroethene	0.0500	0.0361		mg/Kg		72	63 - 127
trans-1,3-Dichloropropene	0.0500	0.0456		mg/Kg		91	79 - 142
cis-1,3-Dichloropropene	0.0500	0.0414		mg/Kg		83	69 - 136
1,2-Dichloropropane	0.0500	0.0417		mg/Kg		83	73 - 128
Ethylbenzene	0.0500	0.0421		mg/Kg		84	74 - 133
2-Hexanone	0.0500	0.0408		mg/Kg		82	33 - 190
Methyl acetate	0.0500	0.0397		mg/Kg		79	26 - 120
Methylene Chloride	0.0500	0.0340		mg/Kg		68	66 - 129
Methylcyclohexane	0.0500	0.0402		mg/Kg		80	71 - 138
Methyl tert-butyl ether	0.0500	0.0341		mg/Kg		68	59 - 140
Styrene	0.0500	0.0431		mg/Kg		86	77 - 132
1,1,1-Trichloroethane	0.0500	0.0433		mg/Kg		87	60 - 129
1,1,2-Trichloroethane	0.0500	0.0423		mg/Kg		85	74 - 130
Trichloroethene	0.0500	0.0390		mg/Kg		78	70 - 132
Trichlorofluoromethane	0.0500	0.0432		mg/Kg		86	52 - 166
Vinyl acetate	0.0500	0.0655		mg/Kg		131	78 - 200
Vinyl chloride	0.0500	0.0428		mg/Kg		86	37 - 143
Xylenes, Total	0.150	0.130		mg/Kg		87	75 - 132
Toluene	0.0500	0.0426		mg/Kg		85	76 - 132
Tetrachloroethene	0.0500	0.0400		mg/Kg		80	66 - 132
Isopropylbenzene	0.0500	0.0413		mg/Kg		83	61 - 136
m-Xylene & p-Xylene	0.100	0.0892		mg/Kg		89	75 - 134
o-Xylene	0.0500	0.0406		mg/Kg		81	71 - 130
methyl isobutyl ketone	0.0500	0.0432		mg/Kg		86	53 - 142

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	106		73 - 146
4-Bromofluorobenzene (Surr)	99		68 - 140
Toluene-d8 (Surr)	100		73 - 127
Dibromofluoromethane	99		74 - 132

# QC Sample Results

Client: Cardno ATC  
Project/Site: Summit

TestAmerica Job ID: 510-84719-2

## Method: 8081A - Organochlorine Pesticides (GC)

**Lab Sample ID: MB 500-166869/1-A**

**Matrix: Solid**

**Analysis Batch: 167120**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 166869**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	<1.7		1.7		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
beta-BHC	<1.7		1.7		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
delta-BHC	<1.7		1.7		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
gamma-BHC (Lindane)	<1.7		1.7		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
Heptachlor	<1.7		1.7		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
Aldrin	<1.7		1.7		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
Heptachlor epoxide	<1.7		1.7		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
Endosulfan I	<1.7		1.7		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
Dieldrin	<1.7		1.7		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
4,4'-DDE	<1.7		1.7		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
Endrin	<1.7		1.7		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
Endosulfan II	<1.7		1.7		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
4,4'-DDD	<1.7		1.7		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
Endosulfan sulfate	<1.7		1.7		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
4,4'-DDT	<1.7		1.7		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
Methoxychlor	<8.3		8.3		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
Endrin ketone	<1.7		1.7		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
Endrin aldehyde	<1.7		1.7		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
alpha-Chlordane	<1.7		1.7		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
gamma-Chlordane	<1.7		1.7		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
Toxaphene	<17		17		ug/Kg		10/22/12 19:42	10/24/12 22:31	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	114		53 - 142				10/22/12 19:42	10/24/12 22:31	1
Tetrachloro-m-xylene	92		43 - 122				10/22/12 19:42	10/24/12 22:31	1

**Lab Sample ID: LCS 500-166869/2-A**

**Matrix: Solid**

**Analysis Batch: 167120**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 166869**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
alpha-BHC	13.3	9.93		ug/Kg		74	52 - 115
beta-BHC	13.3	10.6		ug/Kg		79	72 - 110
delta-BHC	13.3	9.08		ug/Kg		68	66 - 116
gamma-BHC (Lindane)	13.3	9.71		ug/Kg		73	60 - 117
Heptachlor	13.3	9.35		ug/Kg		70	58 - 117
Aldrin	13.3	10.0		ug/Kg		75	56 - 110
Heptachlor epoxide	13.3	13.5		ug/Kg		101	61 - 117
Endosulfan I	13.3	9.82		ug/Kg		74	40 - 110
Dieldrin	13.3	11.0		ug/Kg		83	69 - 110
4,4'-DDE	13.3	11.1		ug/Kg		84	73 - 111
Endrin	13.3	12.4		ug/Kg		93	71 - 127
Endosulfan II	13.3	10.9		ug/Kg		82	53 - 110
4,4'-DDD	13.3	12.0		ug/Kg		90	73 - 119
Endosulfan sulfate	13.3	12.5		ug/Kg		93	69 - 120
4,4'-DDT	13.3	10.1		ug/Kg		75	61 - 135
Methoxychlor	13.3	10.9		ug/Kg		81	54 - 144
Endrin ketone	13.3	11.8		ug/Kg		89	71 - 132
Endrin aldehyde	13.3	12.4		ug/Kg		93	60 - 110

# QC Sample Results

Client: Cardno ATC  
Project/Site: Summit

TestAmerica Job ID: 510-84719-2

## Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 500-166869/2-A

Matrix: Solid

Analysis Batch: 167120

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 166869

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
alpha-Chlordane	13.3	11.0		ug/Kg		83	67 - 110
gamma-Chlordane	13.3	11.1		ug/Kg		83	68 - 110

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl	99		53 - 142
Tetrachloro-m-xylene	75		43 - 122

## Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 510-105485/1-A

Matrix: Solid

Analysis Batch: 105628

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 105485

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	<0.020		0.020		mg/Kg		10/17/12 09:36	10/19/12 15:05	1
PCB-1221	<0.020		0.020		mg/Kg		10/17/12 09:36	10/19/12 15:05	1
PCB-1232	<0.020		0.020		mg/Kg		10/17/12 09:36	10/19/12 15:05	1
PCB-1242	<0.020		0.020		mg/Kg		10/17/12 09:36	10/19/12 15:05	1
PCB-1248	<0.020		0.020		mg/Kg		10/17/12 09:36	10/19/12 15:05	1
PCB-1254	<0.020		0.020		mg/Kg		10/17/12 09:36	10/19/12 15:05	1
PCB-1260	<0.020		0.020		mg/Kg		10/17/12 09:36	10/19/12 15:05	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	102		10 - 164	10/17/12 09:36	10/19/12 15:05	1
Dibutylchloredate	81		10 - 127	10/17/12 09:36	10/19/12 15:05	1

Lab Sample ID: LCS 510-105485/2-A

Matrix: Solid

Analysis Batch: 105628

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 105485

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016	0.334	0.322		mg/Kg		96	74 - 120
PCB-1260	0.334	0.352		mg/Kg		106	74 - 127

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl	110		10 - 164
Dibutylchloredate	94		10 - 127

## Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography - RA

Lab Sample ID: 510-84719-2 MS

Matrix: Solid

Analysis Batch: 105628

Client Sample ID: 3604

Prep Type: Total/NA

Prep Batch: 105628

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016 - RA	<0.021		0.349	0.154	F	mg/Kg	☼	44	74 - 120
PCB-1260 - RA	<0.021		0.349	0.160	F	mg/Kg	☼	46	74 - 127

# QC Sample Results

Client: Cardno ATC  
Project/Site: Summit

TestAmerica Job ID: 510-84719-2

## Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography - RA (Continued)

**Lab Sample ID: 510-84719-2 MS**  
**Matrix: Solid**  
**Analysis Batch: 105628**

**Client Sample ID: 3604**  
**Prep Type: Total/NA**  
**Prep Batch: 105626**

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
DCB Decachlorobiphenyl - RA	45		10 - 164
Dibutylchlorendate - RA	33		10 - 127

**Lab Sample ID: 510-84719-2 MSD**  
**Matrix: Solid**  
**Analysis Batch: 105628**

**Client Sample ID: 3604**  
**Prep Type: Total/NA**  
**Prep Batch: 105626**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	%Rec.		RPD	Limit
				Result	Qualifier				Limits	RPD		
PCB-1016 - RA	<0.021		0.351	0.167	F	mg/Kg	☼	48	74 - 120	8		30
PCB-1260 - RA	<0.021		0.351	0.178	F	mg/Kg	☼	51	74 - 127	11		30

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
DCB Decachlorobiphenyl - RA	50		10 - 164
Dibutylchlorendate - RA	42		10 - 127

## Method: 8151A - Herbicides (GC)

**Lab Sample ID: MB 500-166408/1-A**  
**Matrix: Solid**  
**Analysis Batch: 166430**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 166408**

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
2,4-Dichlorophenoxyacetic acid	<330		330		ug/Kg		10/18/12 13:43	10/20/12 17:55	10
Pentachlorophenol	<170		170		ug/Kg		10/18/12 13:43	10/20/12 17:55	10
2,4,5-Trichlorophenoxyacetic acid	<330		330		ug/Kg		10/18/12 13:43	10/20/12 17:55	10

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
DCAA	83		32 - 122	10/18/12 13:43	10/20/12 17:55	10

**Lab Sample ID: LCS 500-166408/2-A**  
**Matrix: Solid**  
**Analysis Batch: 166430**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 166408**

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec.	
		Result	Qualifier				Limits	
2,4-Dichlorophenoxyacetic acid	1330	954		ug/Kg		72	23 - 125	
Pentachlorophenol	1330	1170		ug/Kg		88	38 - 117	
2,4,5-Trichlorophenoxyacetic acid	1330	1050		ug/Kg		79	30 - 119	

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
DCAA	84		32 - 122

**Lab Sample ID: 510-84719-2 MS**  
**Matrix: Solid**  
**Analysis Batch: 166430**

**Client Sample ID: 3604**  
**Prep Type: Total/NA**  
**Prep Batch: 166408**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS MS		Unit	D	%Rec	%Rec.	
				Result	Qualifier				Limits	
2,4-Dichlorophenoxyacetic acid	<350		1410	1040		ug/Kg	☼	74	23 - 125	
Pentachlorophenol	<170		1410	1060		ug/Kg	☼	75	38 - 117	

# QC Sample Results

Client: Cardno ATC  
Project/Site: Summit

TestAmerica Job ID: 510-84719-2

## Method: 8151A - Herbicides (GC) (Continued)

Lab Sample ID: 510-84719-2 MS

Matrix: Solid

Analysis Batch: 166430

Client Sample ID: 3604

Prep Type: Total/NA

Prep Batch: 166408

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits	
2,4,5-Trichlorophenoxyacetic acid	<350		1410	1150		ug/Kg	✘	81	30 - 119	
<b>Surrogate</b>	<b>%Recovery</b>	<b>MS Qualifier</b>	<b>MS Limits</b>							
DCAA	80		32 - 122							

Lab Sample ID: 510-84719-2 MSD

Matrix: Solid

Analysis Batch: 166430

Client Sample ID: 3604

Prep Type: Total/NA

Prep Batch: 166408

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4-Dichlorophenoxyacetic acid	<350		1390	914		ug/Kg	✘	66	23 - 125	12	30
Pentachlorophenol	<170		1390	946		ug/Kg	✘	68	38 - 117	11	30
2,4,5-Trichlorophenoxyacetic acid	<350		1390	1020		ug/Kg	✘	74	30 - 119	11	30
<b>Surrogate</b>	<b>%Recovery</b>	<b>MSD Qualifier</b>	<b>MSD Limits</b>								
DCAA	73		32 - 122								

## Method: 6010B - Metals (ICP)

Lab Sample ID: MB 500-166523/1-A

Matrix: Solid

Analysis Batch: 166720

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 166523

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<1.0		1.0		mg/Kg		10/19/12 09:15	10/20/12 13:17	1
Barium	<1.0		1.0		mg/Kg		10/19/12 09:15	10/20/12 13:17	1
Cadmium	<0.20		0.20		mg/Kg		10/19/12 09:15	10/20/12 13:17	1
Chromium	<1.0		1.0		mg/Kg		10/19/12 09:15	10/20/12 13:17	1
Lead	<0.50		0.50		mg/Kg		10/19/12 09:15	10/20/12 13:17	1
Selenium	<1.0		1.0		mg/Kg		10/19/12 09:15	10/20/12 13:17	1
Silver	<0.50		0.50		mg/Kg		10/19/12 09:15	10/20/12 13:17	1

Lab Sample ID: LCS 500-166523/2-A

Matrix: Solid

Analysis Batch: 166720

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 166523

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	10.0	9.06		mg/Kg		91	80 - 120
Barium	200	197		mg/Kg		98	80 - 120
Cadmium	5.00	4.71		mg/Kg		94	80 - 120
Chromium	20.0	19.6		mg/Kg		98	80 - 120
Lead	10.0	9.93		mg/Kg		99	80 - 120
Selenium	10.0	8.30		mg/Kg		83	80 - 120
Silver	5.00	4.72		mg/Kg		94	80 - 120

# QC Sample Results

Client: Cardno ATC  
Project/Site: Summit

TestAmerica Job ID: 510-84719-2

## Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 510-105584/1-A  
Matrix: Solid  
Analysis Batch: 105649

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 105584

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.010		0.010		mg/Kg		10/18/12 14:19	10/19/12 10:22	1

Lab Sample ID: LCS 510-105584/2-A  
Matrix: Solid  
Analysis Batch: 105649

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 105584

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	25.1	23.9		mg/Kg		95	72 - 128

## Method: Moisture - Percent Moisture

Lab Sample ID: MB 510-105465/1  
Matrix: Solid  
Analysis Batch: 105465

Client Sample ID: Method Blank  
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	100		0.10		%			10/16/12 18:00	1
Percent Solids	0.027		0.10		%			10/16/12 18:00	1

Lab Sample ID: 510-84719-2 DU  
Matrix: Solid  
Analysis Batch: 105465

Client Sample ID: 3604  
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Moisture	6.7		6.3		%		6	20
Percent Solids	93		94		%		0.4	20

# QC Association Summary

Client: Cardno ATC  
Project/Site: Summit

TestAmerica Job ID: 510-84719-2

## GC/MS VOA

### Analysis Batch: 105694

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
510-84719-2	3604	Total/NA	Solid	8260B	105701
LCS 510-105694/3	Lab Control Sample	Total/NA	Solid	8260B	
MB 510-105694/5	Method Blank	Total/NA	Solid	8260B	

### Prep Batch: 105701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
510-84719-2	3604	Total/NA	Solid	5035	

## GC/MS Semi VOA

### Analysis Batch: 105475

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
510-84719-2	3604	Total/NA	Solid	8270C SIM	105484

### Prep Batch: 105484

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
510-84719-2	3604	Total/NA	Solid	3546	

### Analysis Batch: 105551

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
510-84719-2	3604	Total/NA	Solid	8270C	105484

## GC Semi VOA

### Prep Batch: 105485

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 510-105485/2-A	Lab Control Sample	Total/NA	Solid	3546	
MB 510-105485/1-A	Method Blank	Total/NA	Solid	3546	

### Prep Batch: 105626

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
510-84719-2	3604	Total/NA	Solid	3546	
510-84719-2 MS - RA	3604	Total/NA	Solid	3546	
510-84719-2 MSD - RA	3604	Total/NA	Solid	3546	

### Analysis Batch: 105628

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
510-84719-2	3604	Total/NA	Solid	8082	105626
510-84719-2 MS - RA	3604	Total/NA	Solid	8082	105626
510-84719-2 MSD - RA	3604	Total/NA	Solid	8082	105626
LCS 510-105485/2-A	Lab Control Sample	Total/NA	Solid	8082	105485
MB 510-105485/1-A	Method Blank	Total/NA	Solid	8082	105485

### Prep Batch: 166408

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
510-84719-2	3604	Total/NA	Solid	8151A	
510-84719-2 MS	3604	Total/NA	Solid	8151A	
510-84719-2 MSD	3604	Total/NA	Solid	8151A	
LCS 500-166408/2-A	Lab Control Sample	Total/NA	Solid	8151A	
MB 500-166408/1-A	Method Blank	Total/NA	Solid	8151A	

# QC Association Summary

Client: Cardno ATC  
Project/Site: Summit

TestAmerica Job ID: 510-84719-2

## GC Semi VOA (Continued)

### Analysis Batch: 166430

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
510-84719-2	3604	Total/NA	Solid	8151A	166408
510-84719-2 MS	3604	Total/NA	Solid	8151A	166408
510-84719-2 MSD	3604	Total/NA	Solid	8151A	166408
LCS 500-166408/2-A	Lab Control Sample	Total/NA	Solid	8151A	166408
MB 500-166408/1-A	Method Blank	Total/NA	Solid	8151A	166408

### Prep Batch: 166869

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
510-84719-2	3604	Total/NA	Solid	3541	
LCS 500-166869/2-A	Lab Control Sample	Total/NA	Solid	3541	
MB 500-166869/1-A	Method Blank	Total/NA	Solid	3541	

### Analysis Batch: 167120

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
510-84719-2	3604	Total/NA	Solid	8081A	166869
LCS 500-166869/2-A	Lab Control Sample	Total/NA	Solid	8081A	166869
MB 500-166869/1-A	Method Blank	Total/NA	Solid	8081A	166869

## Metals

### Prep Batch: 105584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
510-84719-2	3604	Total/NA	Solid	7471A	
LCS 510-105584/2-A	Lab Control Sample	Total/NA	Solid	7471A	
MB 510-105584/1-A	Method Blank	Total/NA	Solid	7471A	

### Analysis Batch: 105649

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
510-84719-2	3604	Total/NA	Solid	7471A	105584
LCS 510-105584/2-A	Lab Control Sample	Total/NA	Solid	7471A	105584
MB 510-105584/1-A	Method Blank	Total/NA	Solid	7471A	105584

### Prep Batch: 166523

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
510-84719-2	3604	Total/NA	Solid	3050B	
LCS 500-166523/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-166523/1-A	Method Blank	Total/NA	Solid	3050B	

### Analysis Batch: 166720

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
510-84719-2	3604	Total/NA	Solid	6010B	166523
LCS 500-166523/2-A	Lab Control Sample	Total/NA	Solid	6010B	166523
MB 500-166523/1-A	Method Blank	Total/NA	Solid	6010B	166523

## General Chemistry

### Analysis Batch: 105465

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
510-84719-2	3604	Total/NA	Solid	Moisture	
510-84719-2 DU	3604	Total/NA	Solid	Moisture	
MB 510-105465/1	Method Blank	Total/NA	Solid	Moisture	

# Lab Chronicle

Client: Cardno ATC  
Project/Site: Summit

TestAmerica Job ID: 510-84719-2

**Client Sample ID: 3604**

**Lab Sample ID: 510-84719-2**

**Date Collected: 10/16/12 14:28**

**Matrix: Solid**

**Date Received: 10/16/12 16:49**

**Percent Solids: 93.3**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			105701	10/21/12 08:59	JLH	TAL VAL
Total/NA	Analysis	8260B		1	105694	10/21/12 13:40	JLH	TAL VAL
Total/NA	Prep	3546			105484	10/17/12 09:32	SNP	TAL VAL
Total/NA	Analysis	8270C SIM		1	105475	10/17/12 18:28	WDS	TAL VAL
Total/NA	Prep	3546			105484	10/17/12 09:32	SNP	TAL VAL
Total/NA	Analysis	8270C		1	105551	10/18/12 15:11	WDS	TAL VAL
Total/NA	Prep	8151A			166408	10/18/12 13:43	SCH	TAL CHI
Total/NA	Analysis	8151A		10	166430	10/20/12 20:06	SAW	TAL CHI
Total/NA	Prep	3541			166869	10/22/12 19:42	DEA	TAL CHI
Total/NA	Analysis	8081A		10	167120	10/25/12 00:56	CM	TAL CHI
Total/NA	Prep	3546			105626	10/19/12 09:37	SNP	TAL VAL
Total/NA	Analysis	8082		1	105628	10/19/12 16:21	CLI	TAL VAL
Total/NA	Prep	3050B			166523	10/19/12 09:15	LAH	TAL CHI
Total/NA	Analysis	6010B		1	166720	10/20/12 14:09	PJ	TAL CHI
Total/NA	Prep	7471A			105584	10/18/12 14:19	LWN	TAL VAL
Total/NA	Analysis	7471A		1	105649	10/19/12 10:33	TLA	TAL VAL
Total/NA	Analysis	Moisture		1	105465	10/16/12 18:00	BTG	TAL VAL

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

TAL VAL = TestAmerica Valparaiso, 2400 Cumberland Drive, Valparaiso, IN 46383, TEL (219)464-2389

# Certification Summary

Client: Cardno ATC  
Project/Site: Summit

TestAmerica Job ID: 510-84719-2

## Laboratory: TestAmerica Valparaiso

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Illinois	NELAC	5	200065	01-31-13
Indiana	State Program	5	M-64-4	12-31-13
Indiana	State Program	5	C-64-01	11-24-12
Kentucky (UST)	State Program	4	57	02-01-13
New Hampshire	NELAC	1	2837	01-31-13
USDA	Federal		P330-11-00073	02-09-14
Washington	State Program	10	C842	08-18-13

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-12
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13

# Method Summary

Client: Cardno ATC  
Project/Site: Summit

TestAmerica Job ID: 510-84719-2

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL VAL
8270C	Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	SW846	TAL VAL
8270C SIM	PAHs by GCMS (SIM)	SW846	TAL VAL
8081A	Organochlorine Pesticides (GC)	SW846	TAL CHI
8082	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	TAL VAL
8151A	Herbicides (GC)	SW846	TAL CHI
6010B	Metals (ICP)	SW846	TAL CHI
7471A	Mercury (CVAA)	SW846	TAL VAL
Moisture	Percent Moisture	EPA	TAL VAL

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

TAL VAL = TestAmerica Valparaiso, 2400 Cumberland Drive, Valparaiso, IN 46383, TEL (219)464-2389



# Sample Summary

Client: Cardno ATC  
Project/Site: Summit

TestAmerica Job ID: 510-84719-2

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
510-84719-2	3604	Solid	10/16/12 14:28	10/16/12 16:49

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- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

# Chain of Custody Record



THE LEADER IN ENVIRONMENTAL TESTING

**Client Information**  
 Client Contact: Brian Gerike  
 Brian Gerike  
 Company: ATC Associates, Inc.  
 Address: 2224 Industrial Drive Suite A  
 City: Highland  
 State, Zip: IN, 46322  
 Phone: 219-922-7235(Tel)  
 Email: brian.gerike@atcassociates.com  
 Project Name: Summit  
 Site: 84719

**Lab PIV:** Kintz, Robin M  
**E-Mail:** robinm.kintz@testamericainc.com  
**Carrier Tracking No(s):**  
**COC No:** 510-17492-5545-1  
**Page:**  
**Job #:**

**Due Date Requested:**  
**TAT Requested (days):** Std.  
**PO #:**  
**WO #:**  
**Project #:** 51002172  
**SSOW#:**

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Water, Sediment, Organism, Soil-Tissue, Ash)	Field Filtered Sample (Yes or No)	8081A - Pesticides	8151A - Herbicides	8290B - Target Compound List	8082 - Standard PCB List	8270C + 8270 SIM - SVOC TCL compounds	Metals	PCRN Metals (including PCB)	Client confirmed total	Total Number of containers	Special Instructions/Note:
3603	10/16	14:25	G	S		X	X	X	X	X	X	X	Client confirmed total		
3604	10/16	14:28	G	S		X	X	X	X	X	X	X			

**Possible Hazard Identification**  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown  Radiological  
 Deliverable Requested: I, II, III, IV, Other (specify)

**Empty Kit Relinquished by:**  
 Relinquished by: Brian Gerike  
 Date/Time: 10/19/12 16:49  
 Company: Cardno

**Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)**  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months

**Special Instructions/QC Requirements:**

**Received by:** Robin Kintz  
 Date/Time: 10-16-12 16:49  
 Company: TestAmerica

**Received by:** Robin Kintz  
 Date/Time: 10-16-12 16:49  
 Company: TestAmerica

**Received by:** Robin Kintz  
 Date/Time: 10-16-12 16:49  
 Company: TestAmerica

Temperature readings: \_\_\_\_\_

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container pH</u>	<u>Preservative Added (mls)</u>	<u>Lot #</u>
3603	510-84719-A-1	Voa Vial 40ml - 5mL HNaO4S and	—	—	—
3603	510-84719-B-1	Voa Vial 40ml - 5mL HNaO4S and	—	—	—
3603	510-84719-C-1	Voa Vial 40ml - 5mL MeOH	—	—	—
3603	510-84719-D-1	Other Client Container -	—	—	—
3603	510-84719-E-1	Clear Glass 4oz Wide - unpreserved	—	—	—
3603	510-84719-F-1	Clear Glass 8oz Wide - unpreserved	—	—	—
3603	510-84719-G-1	Clear Glass 8oz Wide - unpreserved	—	Exported	—
3604	510-84719-A-2	Voa Vial 40ml - 5mL HNaO4S and	—	—	—
3604	510-84719-B-2	Voa Vial 40ml - 5mL HNaO4S and	—	—	—
3604	510-84719-C-2	Voa Vial 40ml - 5mL MeOH	—	—	—
3604	510-84719-D-2	Other Client Container -	—	—	—
3604	510-84719-E-2	Clear Glass 4oz Wide - unpreserved	—	—	—
3604	510-84719-F-2	Clear Glass 8oz Wide - unpreserved	—	—	—
3604	510-84719-G-2	Clear Glass 8oz Wide - unpreserved	—	Exported	—

*Dr Coliciz*

## Login Sample Receipt Checklist

Client: Cardno ATC

Job Number: 510-84719-2

**Login Number: 84719**

**List Source: TestAmerica Valparaiso**

**List Number: 1**

**Creator: Crofton, Erin N**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	Check done at department level as required.



## Login Sample Receipt Checklist

Client: Cardno ATC

Job Number: 510-84719-2

**Login Number: 84719**

**List Source: TestAmerica Chicago**

**List Number: 1**

**List Creation: 10/18/12 11:44 AM**

**Creator: Kelsey, Shawn M**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	True	

**APPENDIX K**  
**SEEDING REPORT AND SEED MIX SPECIFICATIONS**





12/21/2012

Randy Palachek  
Project Manager  
PARSONS  
8000 Centre Park Drive  
Suite 200  
Austin, TX 78754-5140

Cardno JFNew

708 Roosevelt Road  
Walkerton, Indiana 46574  
USA

Phone 574 586 3400  
Fax 574 586 3446  
[www.cardno.com](http://www.cardno.com)

[www.cardnojfnew.com](http://www.cardnojfnew.com)

**Subject: DuPont East Chicago Site, Post-Planting Report**

Dear Randy:

Thank you for the opportunity to be of service to Parsons at the DuPont East Chicago site. I am sending this letter as a post-planting field report and documentation of the completion of our contracted scope.

Cardno JFNew supplied two field technicians to perform the seeding on 12/17 and 12/18/2012. Prior to any field activity, Cardno JNew staff checked in and received the required site orientation and safety briefing from on-site Parsons staff. Daily tailgate safety meetings and equipment checks were conducted prior to start of work; copies of daily meeting and inspection reports are attached for your records.

Before work was initiated on the morning of the 17<sup>th</sup>, staff from Cardno JFNew, Parsons, and The Nature Conservancy conducted a site walk-through to discuss field conditions, seeding areas, and installation approach. The seed was installed using a combination of a Trillion drop-seeding implement and a tractor-mounted broadcast spreader. The seed mix is attached. Site conditions at the time of seeding were damp due to rain the area received on 12/16.

Areas were seeded per discussion shared during the walk-through and are as follows:

**Areas A, B, and I:** These areas all displayed wetland conditions throughout their boundaries; no seeding was performed in these areas

**Areas C and D:** The majority of these areas were seeded, with the exception of the lowest points toward the Eastern edges of the units. These areas were finish graded with a clay/sand mix which was still very wet. Given the conditions in these areas, the majority of these areas were seeded using the broadcast seeder. Some areas of compacted sand on the southeast corner of Area D were seeded with a Trillion seeder.

**Area E:** Although the final grade of this area was at an elevation similar to that of surrounding wetlands, the material in the zone was pure native sand and therefore very well-drained. While some areas of the zone will certainly develop wetland conditions over time, Cardno JFNew field staff expects that the majority of the zone will support the upland seed mix. Consequently, the entire area with the exception of a very low area at the eastern edge was seeded with the upland mix. The loose sand conditions throughout the area required broadcast seeding.

**Area F:** The linear area of this unit at the North end which runs due East-West was mostly upland and was seeded with the exception of the low area on the Eastern end. Additionally, a small strip of upland running along the western edge of the unit, the southern tip of the unit, and a small sand knoll on the eastern edge were seeded. The remainder of this unit was at wetland elevation and was not seeded.

**Area G:** This area consisted of slag fill material. The eastern half of the unit was graded to wetland elevation, but the western half of the unit was graded to upland elevation and was seeded. The well-drained conditions of the slag made seeding with the Trillion possible. Some areas around the eastern edge impossible to access with the tractor were broadcast seeded..

**Area H:** This area was graded almost entirely to wetland elevation, with the exception of a small strip of upland area along the western edge. This zone was inaccessible to equipment; the small strip along the western edge was broadcast seeded..

Please contact me if you have any questions regarding the information supplied in this report, or if you require any additional information. We look forward to the opportunity to be of continued service to Parsons in the future.

Regards,



Ryan Allison  
Operations Manager  
for Cardno JFNew  
Cell: 574 229 5078  
Email: ryan.allison@cardno.com

Enc:  
cc:  
File:



# Attachment C-5.2-2

## Earth-Moving Equipment Inspection

Check equipment to be inspected: Dump Truck \_\_\_\_\_ Front – end Loader \_\_\_\_\_  
 Backhoe \_\_\_\_\_ Bulldozer \_\_\_\_\_ Motor Grader \_\_\_\_\_  
 Other \_\_\_\_\_  
 Equipment identification number JD Tractor 4510

ITEMS	CONDITION			REMARKS
	good	rejected	n/a	
1. Access & Egress*	✓		✓	
2. Backup Alarms*			✓	
3. Body	✓			
4 Excess slack in boom*			✓	
5. Boom Pins*			✓	
6. Brakes*	✓		✓	
7. Bulk Head Partition*			✓	
8. Clutch*	✓			
9. Cotter Pins/Hardened Pins*	✓			
10. Cover	✓			
11. Fire Extinguisher			✓	
12. Frame	✓			
13. Fuel Systems*	✓			
14. Glass*			✓	
15. Guards*	✓			
16. Horn*			✓	
17. Hydraulic System* (no leaks)	✓			
18. Operator Controls Labeled			✓	
19. Lights	✓			
20. Lugs	✓			
21. Muffler & Exhaust Pipe*	✓			
22. Muffler Guards*			✓	
23. Outriggers*			✓	
24. Parking Brakes*	✓			
25. Platform Decking			✓	
26. Positive Dump Bed Latch*			✓	
27. Rear View Mirror			✓	
28. Rollover Protection*	✓			
29. Seat Belts*	✓			
30. Side Mirrors (Both)*			✓	
31. Steering Mechanism*	✓			
32. Tracks, Tires, Wheels*	✓			
33. Turn Signals	✓			
34. Windshield Wipers			✓	
35. Steps and Grabs	✓			

\* If any of these are rejected, the equipment shall not be used.

Tom Carr  
 Inspected by

12-17-12  
 Date



# DAILY SAFETY BRIEFING/ TAILGATE MEETING RECORD

Date: 12/18/12 Time: 8:10 am Conducted By: CBW  
 Project: DuPont Polymers Project#: 1210053.00  
 Specific Location: E Concord, IN

### SAFETY TOPICS DISCUSSED

#### Job Tasks (select all that apply):

- Outdoor Work
- Erosion Blanket Installation
- ATV Operation
- Electro-shocking
- Other: \_\_\_\_\_
- Herbicide Application
- Chainsaw/ Brushsaw Operation
- Boat/ Canoe Operation
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Tractor Operation
- Small Equipment Operation
- Prescribed Burning
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

#### Hazard Checklist (select all that apply):

- Inclement Weather
- Lifting/ Carrying Materials
- Hearing Loss
- Electrical Hazard
- Other: \_\_\_\_\_
- Hazardous Terrain
- Equipment Operation
- Drowning
- Poisonous Plants/ Animals
- Other: \_\_\_\_\_
- Chemical Exposure
- Sharp Tools
- Fire/ Smoke Inhalation
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

#### Controls Checklist (select all that apply):

- Hard hat
- Nomex Gear
- Cold Weather Gear
- Two-Way Radios
- Other: \_\_\_\_\_
- Leather Gloves
- Chaps/ Face guard
- Fall Protection
- Barricades
- Other: \_\_\_\_\_
- Eye Protection
- Ear protection
- Life Jackets
- Fire Extinguisher
- Other: \_\_\_\_\_
- Chemical Resistant Gloves
- Waders
- High Visibility Vest
- Backup Alarms
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

EMPLOYEE NAME/ COMPANY	SIGNATURE
Curtis Woodhouse	Tom [Signature]
Tom [Signature]	

# Attachment C-5.2-2

## Earth-Moving Equipment Inspection

Check equipment to be inspected:

Dump Truck \_\_\_\_\_ Front - end Loader \_\_\_\_\_  
 Backhoe \_\_\_\_\_ Bulldozer \_\_\_\_\_ Motor Grader \_\_\_\_\_  
 Other \_\_\_\_\_

Equipment identification number John Deere Tractor 4510

ITEMS	CONDITION			REMARKS
	good	rejected	n/a	
1. Access & Egress*	✓		✓	
2. Backup Alarms*			✓	
3. Body	✓			
4. Excess slack in boom*			✓	
5. Boom Pins*			✓	
6. Brakes*	✓			
7. Bulk Head Partition*			✓	
8. Clutch*	✓			
9. Cotter Pins/Hardened Pins*	✓			
10. Cover	✓			
11. Fire Extinguisher			✓	
12. Frame	✓			
13. Fuel Systems*	✓			
14. Glass*			✓	
15. Guards*	✓			
16. Horn*			✓	
17. Hydraulic System* (no leaks)	✓			
18. Operator Controls Labeled			✓	
19. Lights	✓			
20. Lugs	✓			
21. Muffler & Exhaust Pipe*	✓			
22. Muffler Guards*			✓	
23. Outriggers*			✓	
24. Parking Brakes*	✓			
25. Platform Decking			✓	
26. Positive Dump Bed Latch*			✓	
27. Rear View Mirror			✓	
28. Rollover Protection*	✓			
29. Seat Belts*	✓			
30. Side Mirrors (Both)*			✓	
31. Steering Mechanism*	✓			
32. Tracks, Tires, Wheels*	✓			
33. Turn Signals	✓			
34. Windshield Wipers			✓	
35. Steps and Grabs	✓			

\* If any of these are rejected, the equipment shall not be used.

*Tom Ross*

Inspected by

*12-18-12*

Date

# WYATT SEED COMPANY, INC.

WHOLESALE DEALERS IN

FIELD -  - SEEDS

P.O. BOX 218 - HWY. 57 SOUTH  
PETERSBURG, INDIANA 47667

PHONE (800) 581-5826  
(812) 354-8542  
FAX: (812) 354-3891

SUBMITTAL FOR DAYLIGHT FARM SUPPLY  
November 6, 2012

DUPONT-EAST CHICAGO JOB "Temporary cover mix"

PLS	Purity	Germ.	Origin
25# Winter Wheat	98.00%	85%	IL
25# Bounty Annual Ryegrass	99.40%	90%	OR

Note: Substituted Wheat in place of Winter Rye due to the fact that Winter Rye produces Allelochemicals which may reduce the stand of annual ryegrass or the permanent seeding which will follow the temporary cover mix.

**From:** [Betchan, Clinton](#)  
**To:** [Thompson, Keith](#)  
**Subject:** FW: Proposed upland seed mix for Dupont East Chicago site  
**Date:** Thursday, February 07, 2013 11:21:36 AM

---

fyi

---

**From:** Ryan Allison [mailto:Ryan.Allison@cardno.com]  
**Sent:** Thursday, December 13, 2012 9:59 AM  
**To:** Betchan, Clinton  
**Subject:** FW: Proposed upland seed mix for Dupont East Chicago site

Clint,  
Please see Paul's sign-off on the seed mix below. SSHEP on Cardno template coming to you shortly. Thanks.

Ryan Allison

---

**From:** Paul Labus [mailto:plabus@TNC.ORG]  
**Sent:** Thursday, December 13, 2012 10:54 AM  
**To:** Ryan Allison  
**Subject:** RE: Proposed upland seed mix for Dupont East Chicago site

Ryan – the new list is ok with me. paul

---

**From:** Ryan Allison [mailto:Ryan.Allison@cardno.com]  
**Sent:** Tuesday, December 11, 2012 4:12 PM  
**To:** Paul Labus  
**Subject:** RE: Proposed upland seed mix for Dupont East Chicago site

Stock Number	Botanic name	Common name	Qty	Units
PG-ANDGER-SP	Andropogon gerardii	big bluestem grass	375	PLS oz.
PF-ASCSYR-SL	Asclepias syriaca	common milkweed	15	PLS oz.
CC-AVESAT-SP	Avena sativa	oats	10800	PLS oz.
	Coreopsis lanceolata	sand coreopsis	15	PLS oz.
	Euphorbia corollata	flowering spurge	7.5	PLS oz.
PF-LESCAP-SL	Lespedeza capitata	round-headed bush clover	30	PLS oz.
PF-LUPPER-SP	Lupinus perennis	wild lupine	15	PLS oz.
PG-SCHSCO-SP	Schizachyrium scoparium (Andropogon scoparius)	little bluestem	450	PLS oz.
PG-SORNUT-SP	Sorghastrum nutans	Indian grass	450	PLS oz.
PG-SORAND-SL	Sorghastrum nutans/Andropogon gerardii blend	indian grass/big bluestem blend	33.56	PLS oz.

Notes: This mix quoted for 15 acres. Use Northern IN genotypes for all species.

Paul,  
Here is the revised seed mix. We took out the beard tongue and compass plant and subbed them with sand coreopsis and euphorbia. The Rudbeckia triloba and Ratibida pinnata were

mixed and we can't separate them so I just dropped them too. We don't have any local *Desmodium canadense*.

The lupine is from our nursery and sourced to St. Joseph County

Please let me know if you want any additional changes. We're pretty limited on local genotype availability, but we'll work with you to do what we can. Thanks.

ryan

---

**From:** Paul Labus [<mailto:plabus@TNC.ORG>]  
**Sent:** Tuesday, December 11, 2012 4:23 PM  
**To:** Ryan Allison  
**Subject:** RE: Proposed upland seed mix for Dupont East Chicago site

Ryan  
Please drop the beard tongue and compass plant from the mix - neither are currently in the natural area. you could replace them with any of the following: *Coreopsis lanceolata*, *Euphorbia corollata*, *Helianthus occidentalis*, *Phlox pilosa*, or *Solidago speciosa*. If that doesn't work let me know and i will come up with some other options.

We do not have *Rudbeckia triloba* on site but we do have *R. hirta* - can we make that change in the blend with *Ratibida pinnata*?

Can we replace *Desmodium illinoense* with *D. canadense*?

Where is the seed source from for the lupine? we have Karners on site so i need to check.

If you have any questions give me a call on my cell - 219-730-3756.

paul

---

**From:** Ryan Allison [[Ryan.Allison@cardno.com](mailto:Ryan.Allison@cardno.com)]  
**Sent:** Tuesday, December 11, 2012 12:19 PM  
**To:** Paul Labus; Betchan, Clinton ([Clinton.Betchan@parsons.com](mailto:Clinton.Betchan@parsons.com))  
**Subject:** Proposed upland seed mix for Dupont East Chicago site

Paul,  
Please see the proposed see mix below and let me know if you would like to see any modifications. All species are from NW Indiana seed lots. The species composition is a little limited due to local seed availability. Thanks.

Stock Number	Botanic name	Common name	Qty	Units
PG-ANDGER-SP	<i>Andropogon gerardii</i>	big bluestem grass	375	PLS oz.
PF-ASCSYR-SL	<i>Asclepias syriaca</i>	common milkweed	15	PLS oz.
CC-AVESAT-SP	<i>Avena sativa</i>	oats	10800	PLS oz.
PF-DESILE-SL	<i>Desmodium illinoense</i>	Illinois tick trefoil	7.5	PLS oz.
PF-LESCAP-SL	<i>Lespedeza capitata</i>	round-headed bush clover	30	PLS oz.
PF-LUPPER-SP	<i>Lupinus perennis</i>	wild lupine	15	PLS oz.
PF-PENDIG-SP	<i>Penstemon digitalis</i>	foxglove beard tongue	15	PLS oz.
PF-RUDRAT-		brown-eyed susan/yellow		

SL	Rudbeckia triloba/Ratibida pinnata blend	coneflower blend	60	PLS oz.
PG-SCHSCO-SP	Schizachyrium scoparium (Andropogon scoparius)	little bluestem	450	PLS oz.
PF-SILLAC-SL	Silphium laciniatum	compass plant	7.5	PLS oz.
PG-SORNUT-SP	Sorghastrum nutans	Indian grass	450	PLS oz.
PG-SORAND-SL	Sorghastrum nutans/Andropogon gerardii blend	indian grass/big bluestem blend	33.56	PLS oz.

Notes: This mix quoted for 15 acres. Use NW IN genotypes for all species.

## Ryan Allison

OPERATIONS MANAGER  
CARDNO JFNEW



Phone (+1) 574-586-3400 Fax (+1) 574-586-3446 Mobile (+1) 574-229-5078

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**APPENDIX L  
SURVEY MAPPING**





Dark Green Line Delineates Wetlands  
Areas within Individual Areas

www.rmsurveying.com



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Ph: (765) 289-1917    Ph: (260) 563-4467    Ph: (574) 753-9333  
Fax: (765) 289-1931    Fax: (260) 563-4462    Fax: (574) 753-9485  
muncie@rmsurveying.com    wabash@rmsurveying.com    logansport@rmsurveying.com



*Randall Miller*  
RANDALL D. MILLER, RLS-80880001

JOB NO: 12-0200  
CREW: M. Grooms  
DRAWN BY: P. Morton  
CHECKED BY: R. Miller  
DATE: November 19, 2012

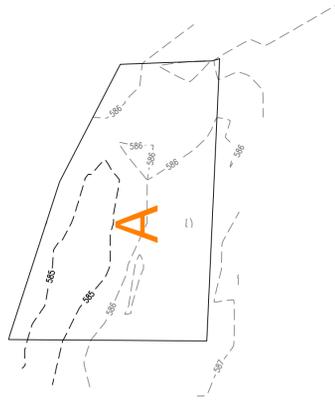
Overall Initial Ground  
Topography

Dupont East Chicago  
Facility  
East Chicago, Indiana

HORIZONTAL SCALE  
1" = 100'  
VERTICAL SCALE  
N/A

SHEET  
**1 of 1**

Z:\LARGE JOBS\SUMMIT CONTRACTING\DUPONT PROJECT LAKE COUNTY\DWG\DUPONT FINAL SUB\12-0200-01.dwg



Note: Area A not depicted in the exact relative position to the other areas on the site in order to show all of the areas at the current scale.



Green Line Delineates Wetlands  
Areas within Individual Areas

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 Fax: (765) 289-1931

300 East Broadway, Ste. #106  
 Logansport, IN 46947  
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 Ph: (260) 563-4467  
 Fax: (260) 563-0462

randallmiller.com  
 rmsurveying.com  
 logansportmmsurveying.com

RANDALL D MILLER  
 REGISTERED  
 No. LS-80880001  
 STATE OF INDIANA  
 LAND SURVEYOR

*Randall Miller*  
 RANDALL D. MILLER, RLS-80880001

JOB NO: 12-0200  
 CREW: M. Grooms  
 DRAWN BY: P. Morton  
 CHECKED BY: R. Miller  
 DATE: November 19, 2012

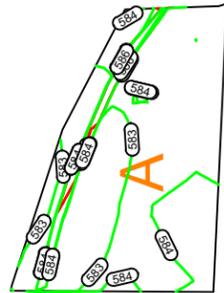
Initial Ground  
 Topography

Dupont East Chicago  
 Facility  
 East Chicago, Indiana

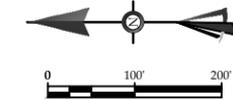
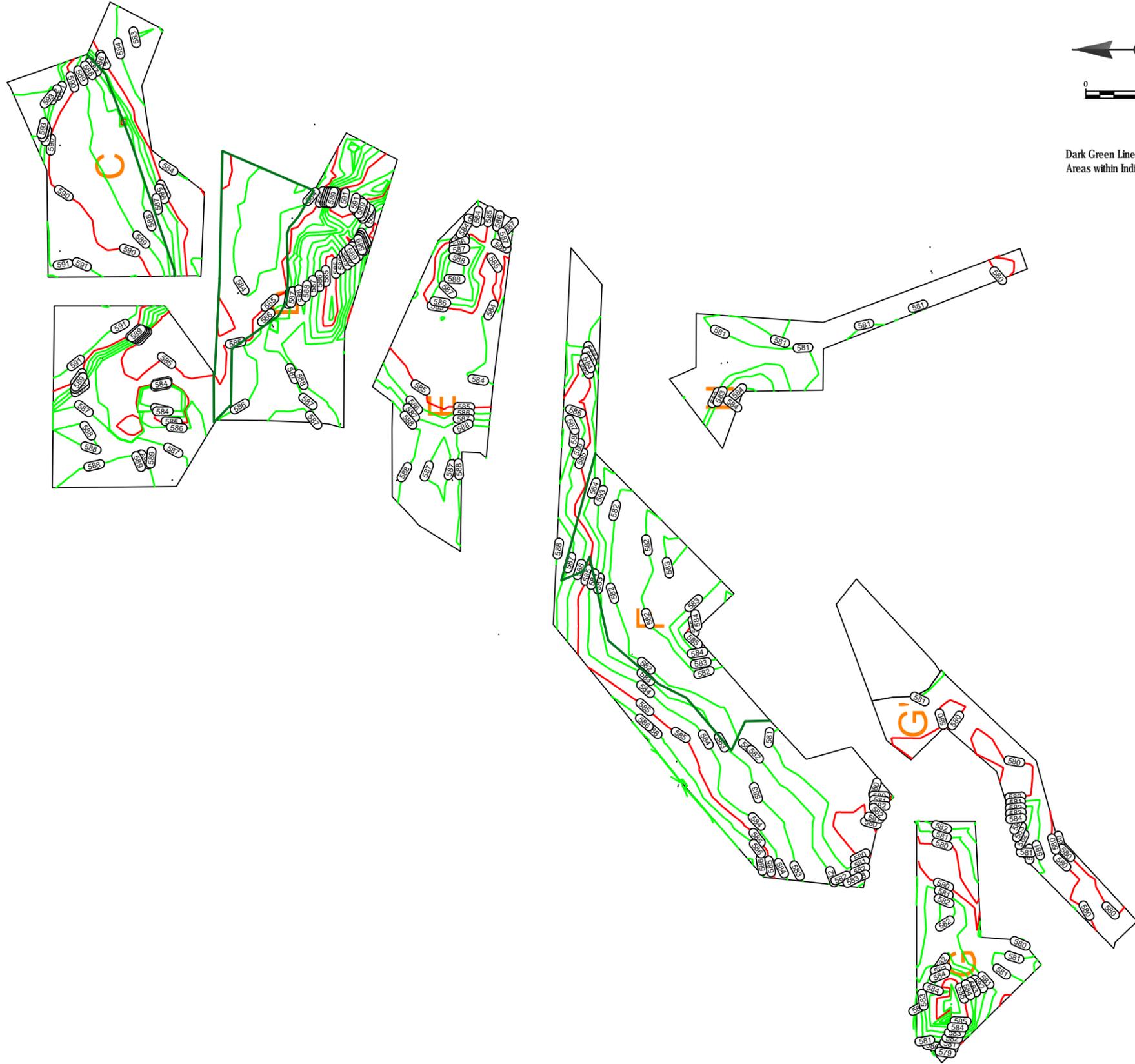
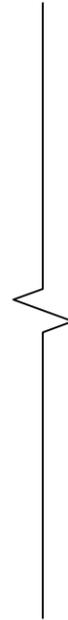
HORIZONTAL SCALE  
 1" = 100'  
 VERTICAL SCALE  
 N/A

SHEET  
**1 of 1**

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Note: Area A not depicted in the exact relative position to the other areas on the site in order to show all of the areas at the current scale.



Dark Green Line Delineates Wetlands Areas within Individual Areas

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marion@rmasurveying.com



*Randall Miller*  
RANDALL D. MILLER, RLS-80880001

JOB NO: 12-0200  
CREW: M. Grooms  
DRAWN BY: P. Morton  
CHECKED BY: R. Miller  
DATE: November 19, 2012

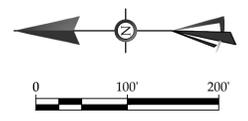
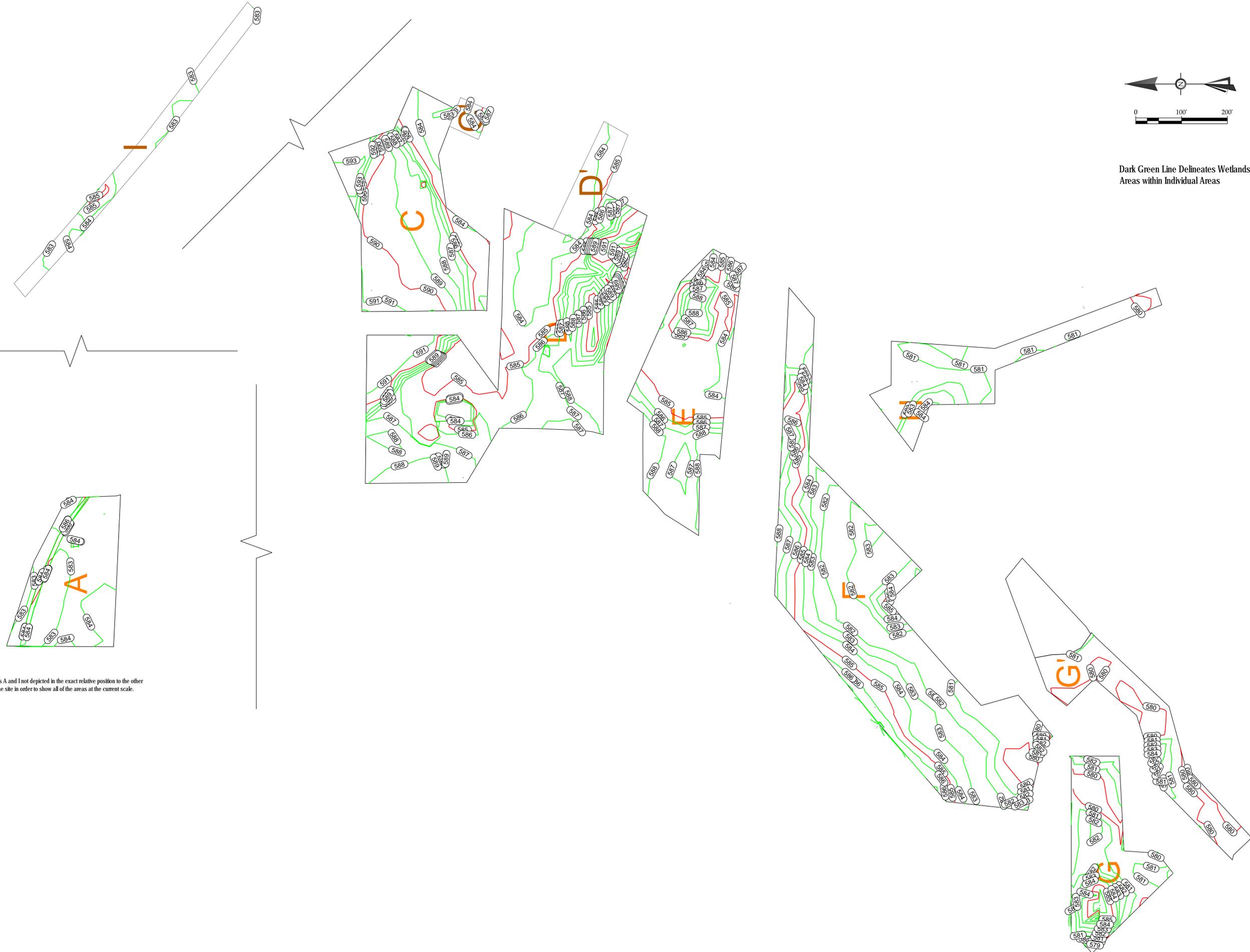
Post Excavation  
Topography

Dupont East Chicago  
Facility  
East Chicago, Indiana

HORIZONTAL SCALE  
1" = 1000'  
VERTICAL SCALE  
N/A

SHEET  
1 of 1

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Dark Green Line Delineates Wetlands  
Areas within Individual Areas

Note: Areas A and I not depicted in the exact relative position to the other areas on the site in order to show all of the areas at the current scale.

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logansport@rmasurveying.com

RANDALL D. MILLER  
REGISTERED  
No. LS-80880001  
STATE OF INDIANA  
LAND SURVEYOR

*Randall Miller*  
RANDALL D. MILLER, RLS-80880001

JOB NO: 12-0200  
CREW: M. Grooms  
DRAWN BY: P. Morton  
CHECKED BY: R. Miller  
DATE: December 17, 2012

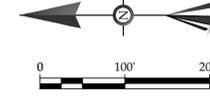
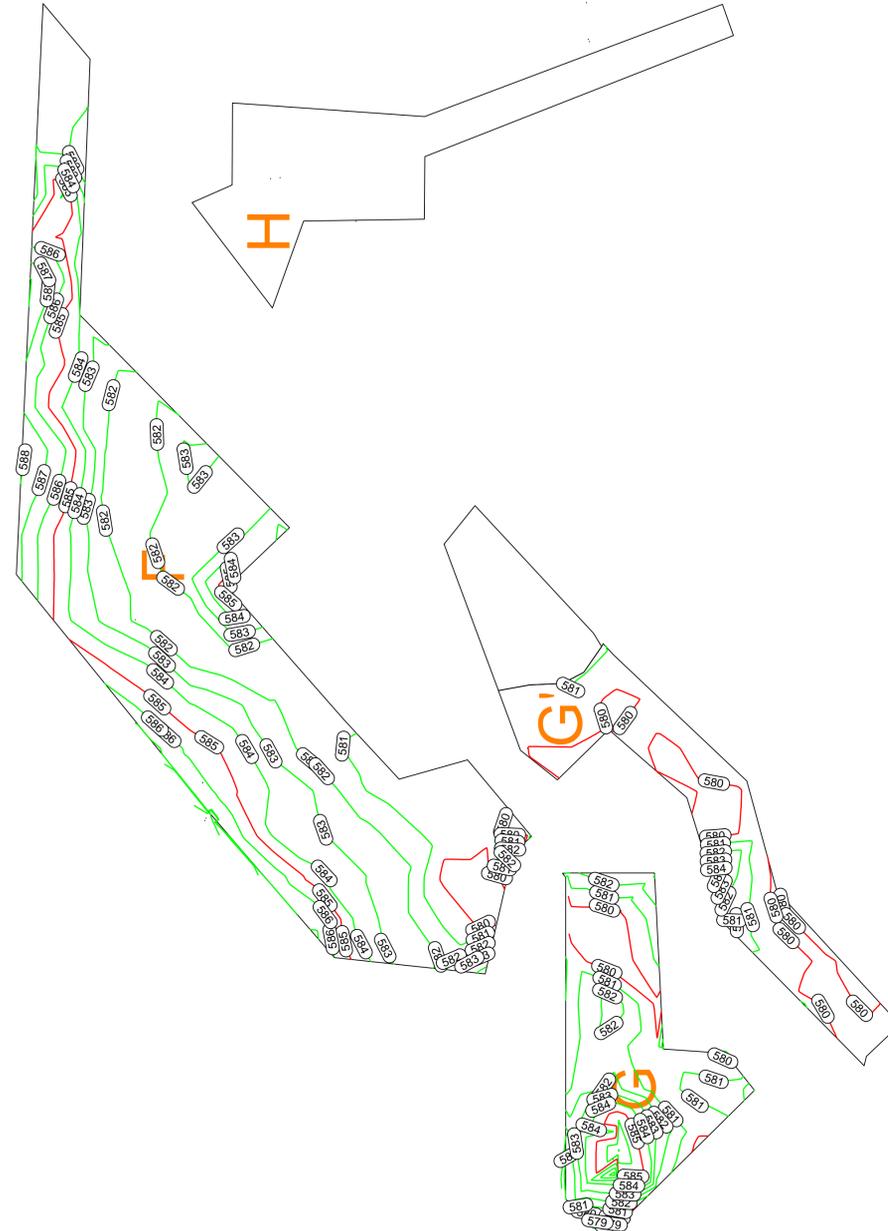
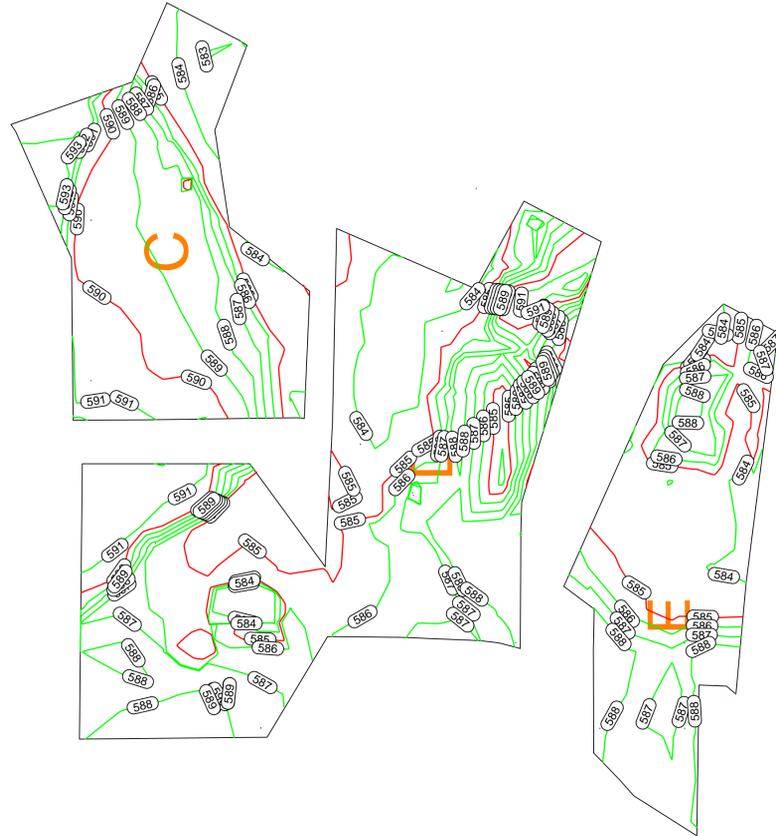
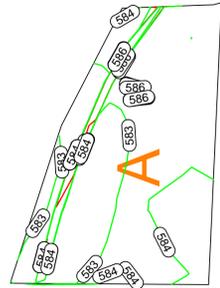
Post Excavation  
Topography

Dupont East Chicago  
Facility  
East Chicago, Indiana

HORIZONTAL SCALE  
1" = 1000"  
VERTICAL SCALE  
N/A

SHEET  
1 of 1

Z:\LARGE JOBS\SUMMIT CONTRACTING\ DUPONT PROJECT\LAKE COUNTY IN\DWG\ DUPONT FINAL.DWG



\*\*Area H still to be surveyed for excavation topography\*\*

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 Marion, IN 46952  
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300 East Broadway, Ste. #106  
 Logansport, IN 46947  
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 Wabash, IN 46992  
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randallmiller.com  
 rmsurveying.com  
 logansportmmsurveying.com

RANDALL D MILLER  
 REGISTERED  
 No. LS-80880001  
 STATE OF INDIANA  
 LAND SURVEYOR

*Randall Miller*  
 RANDALL D. MILLER, RLS-80880001

JOB NO: 12-0200  
 CREW: M. Grooms  
 DRAWN BY: P. Morton  
 CHECKED BY: R. Miller  
 DATE: November 1, 2012

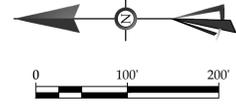
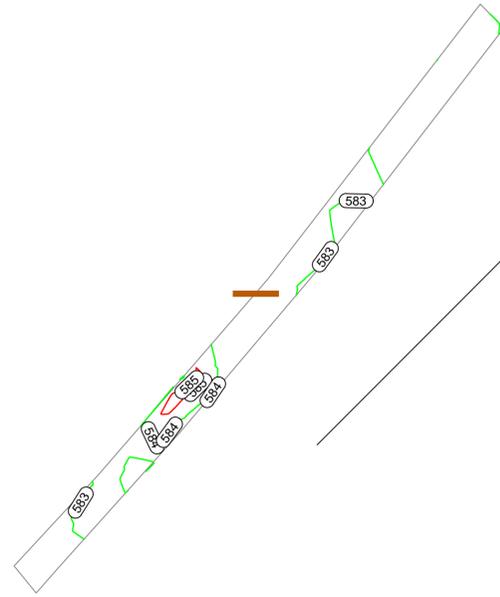
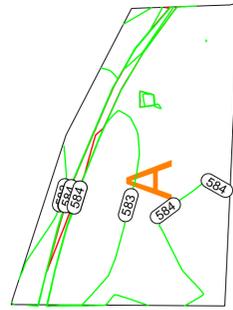
Post Excavation  
 Topography

Dupont East Chicago  
 Facility  
 East Chicago, Indiana

HORIZONTAL SCALE  
 1" = 1000'  
 VERTICAL SCALE  
 N/A

SHEET  
 1 of 1

Z:\LARGE JOBS\SUMMIT CONTRACTING\DUPOINT PROJECT LAKE COUNTY\DWG\DUPOINT FINAL SUB\12-0200-1-1-12-1.dwg

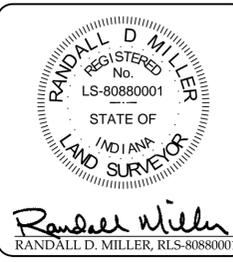


**Dupont East Chicago Facility  
East Chicago, Indiana**

**Final Topography**

HORIZONTAL SCALE  
1" = 1000"  
VERTICAL SCALE  
N/A

SHEET  
**1 of 1**



*Randall Miller*  
RANDALL D. MILLER, RLS-80880001

JOB NO: 12-0200  
CREW: M. Grooms  
DRAWN BY: P. Morton  
CHECKED BY: R. Miller  
DATE: December 19, 2012

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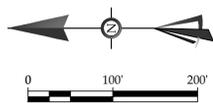
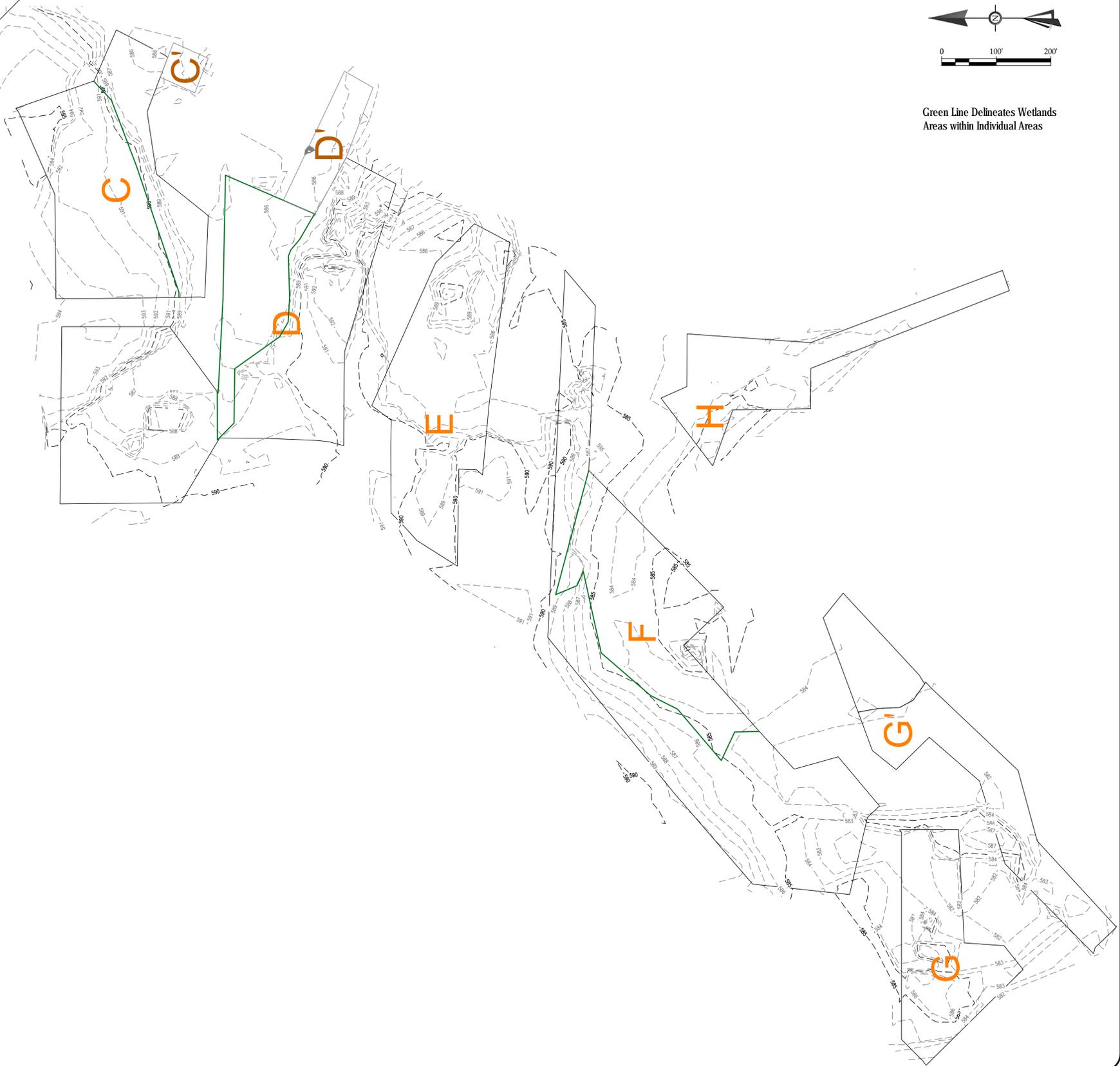
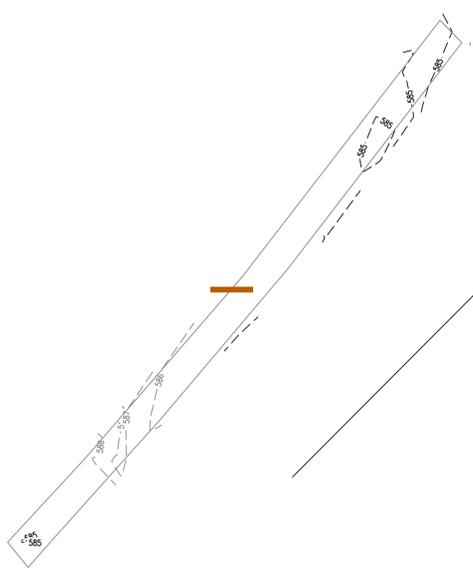
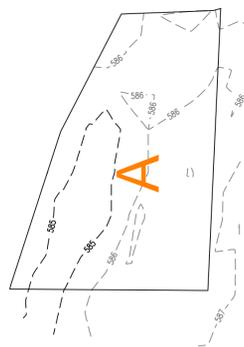
www.rmasurveying.com

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Marion, IN 46952  
Ph: (765) 662-1284  
Fax: (765) 668-7412

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marion@rmasurveying.com  
muncie@rmasurveying.com  
wabash@rmasurveying.com  
logansport@rmasurveying.com



Green Line Delineates Wetlands  
Areas within Individual Areas

Note: Areas A and I not depicted in the exact relative position to the other areas on the site in order to show all of the areas at the current scale.

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 Fax: (765) 284-1931

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 Fax: (774) 753-9485

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 Wabash, IN 46992  
 Ph: (260) 563-4467  
 Fax: (260) 563-0462

randallmiller.com  
 muncie@randallmiller.com  
 logansport@randallmiller.com  
 wabash@randallmiller.com

RANDALL D MILLER  
 REGISTERED  
 No. LS-80880001  
 STATE OF INDIANA  
 LAND SURVEYOR

*Randall Miller*  
 RANDALL D. MILLER, RLS-80880001

JOB NO: 12-0200  
 CREW: M. Grooms  
 DRAWN BY: P. Morton  
 CHECKED BY: R. Miller  
 DATE: December 17, 2012

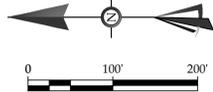
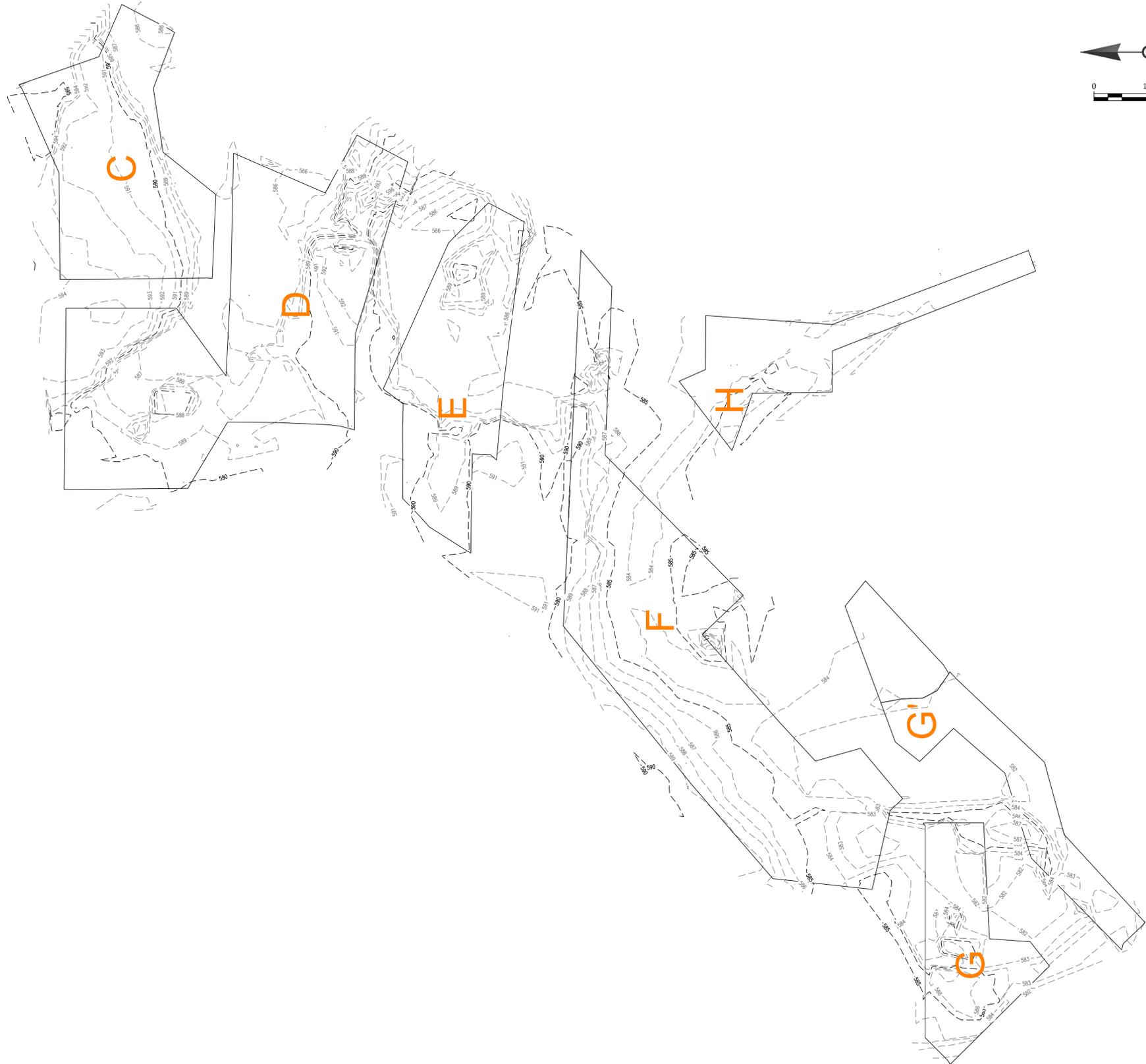
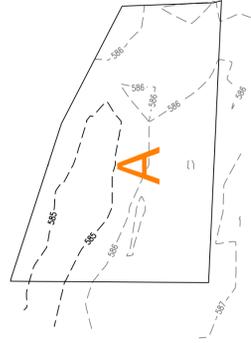
Initial Ground  
 Topography

Dupont East Chicago  
 Facility  
 East Chicago, Indiana

HORIZONTAL SCALE  
 1" = 100'  
 VERTICAL SCALE  
 N/A

SHEET  
**1 of 1**

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Fax: (765) 298-1931  
muncie@rmsurveying.com

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Fax: (774) 753-9485  
logansport@rmsurveying.com



*Randall Miller*  
RANDALL D. MILLER, RLS-80880001

JOB NO: 12-0200  
CREW: M. Grooms  
DRAWN BY: P. Morton  
CHECKED BY: R. Miller  
DATE: November 5, 2012

Initial Ground  
Topography

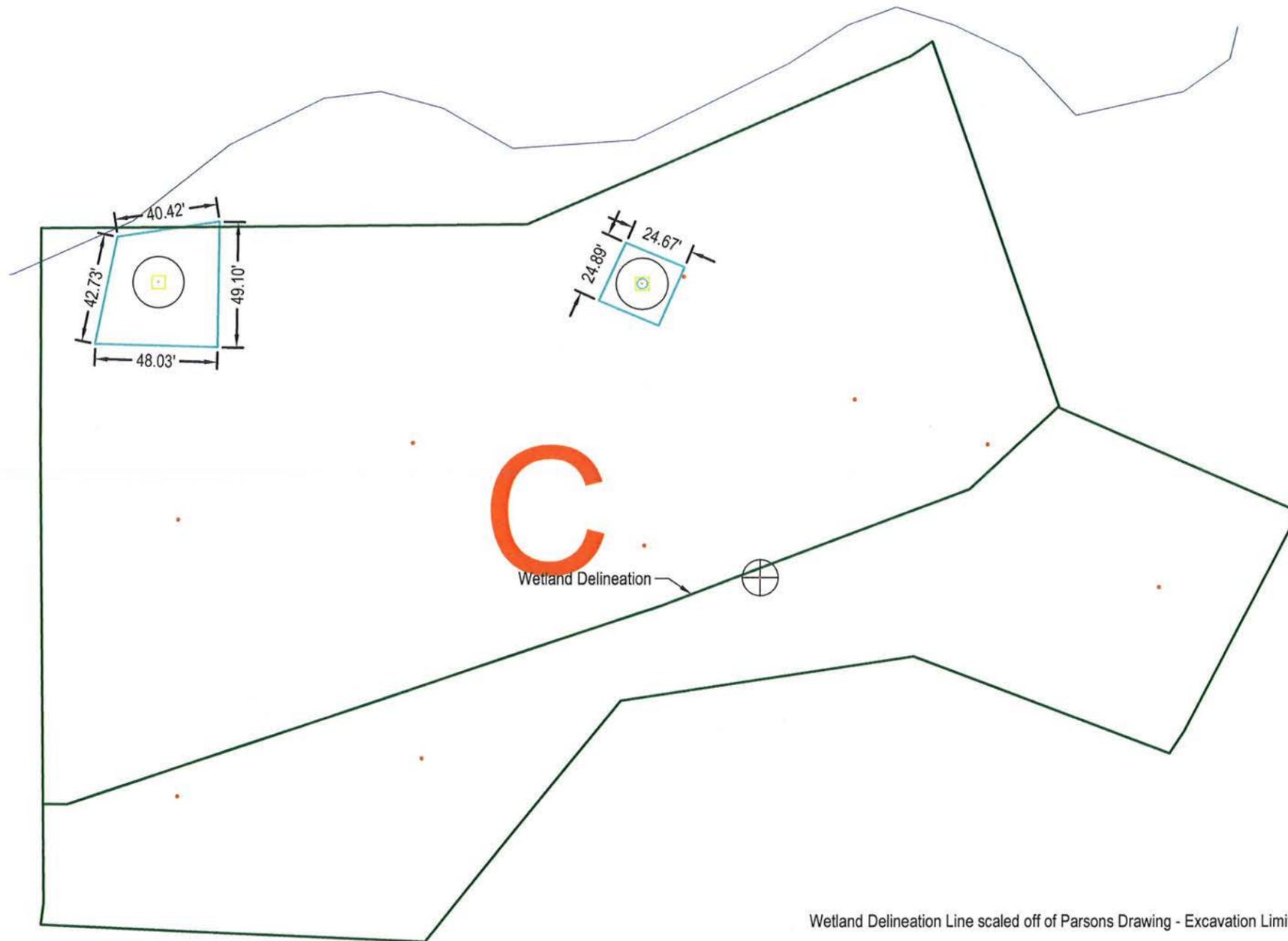
Dupont East Chicago  
Facility  
East Chicago, Indiana

HORIZONTAL SCALE  
1" = 100'  
VERTICAL SCALE  
N/A

SHEET  
**1 of 1**

Z:\LARGE JOBS\SUMMIT CONTRACTING\DUPOINT PROJECT LAKE COUNTY\DWG\DUPOINT FINAL SUB\12-0200-1-1.dwg

# Area "C" Haz Dig Areas



Wetland Delineation Line scaled off of Parsons Drawing - Excavation Limits Point (5/14/12)

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 Logansport, IN 46947  
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 Fax: (574) 753-9485  
 logansport@rmasurveying.com

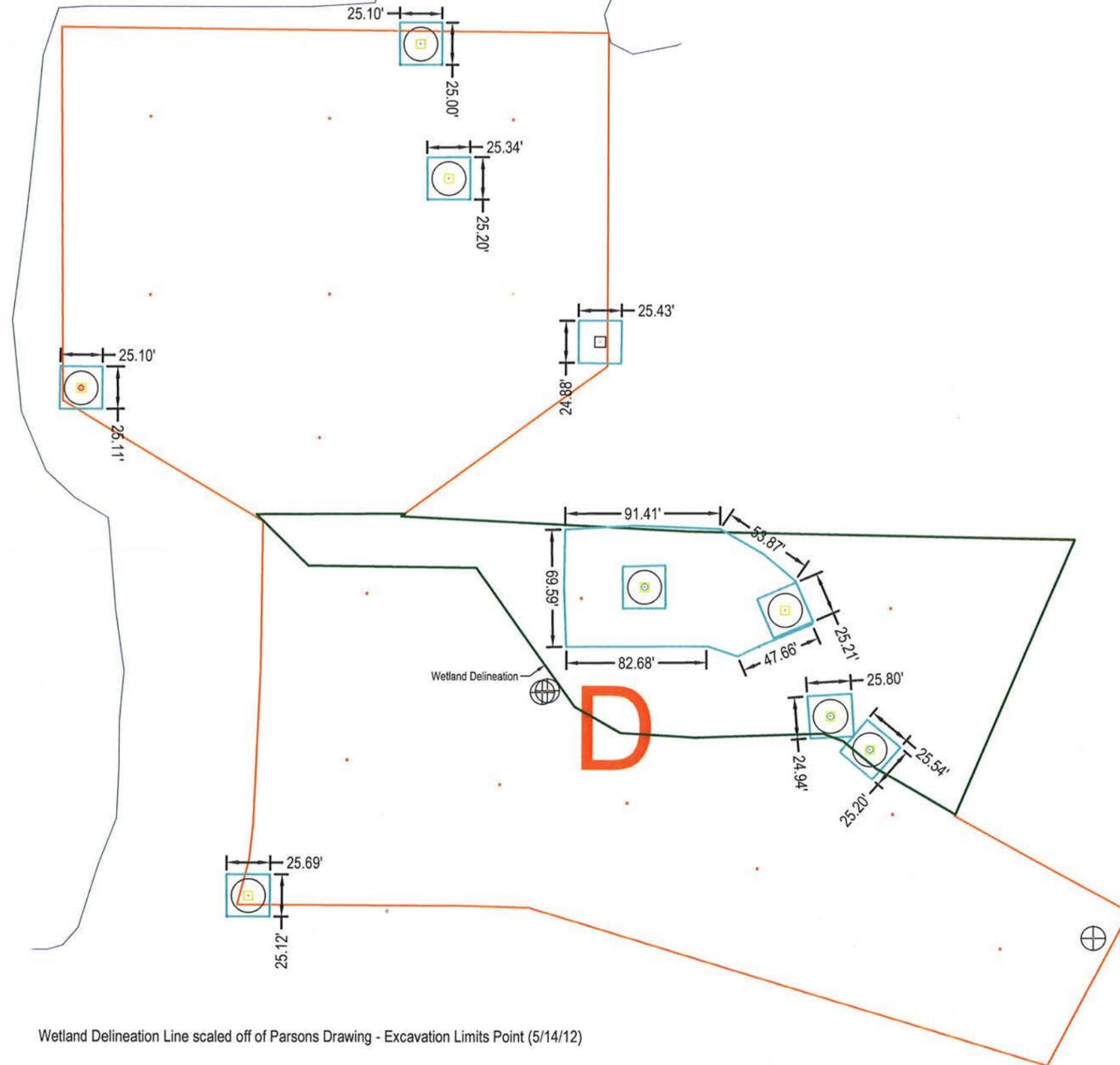
JOB NO: 12-0200  
 CREW: M. Grooms  
 DRAWN BY: P. Morton  
 CHECKED BY: R. Miller  
 DATE: October 30, 2012



*Randall Miller*  
 RANDALL D. MILLER, RLS-80880001

SHEET  
**1 of 1**

# Area "D" Haz Dig Areas



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 Fax: (765) 668-7412  
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 Fax: (260) 563-0462  
 wabashi@rmasurveying.com

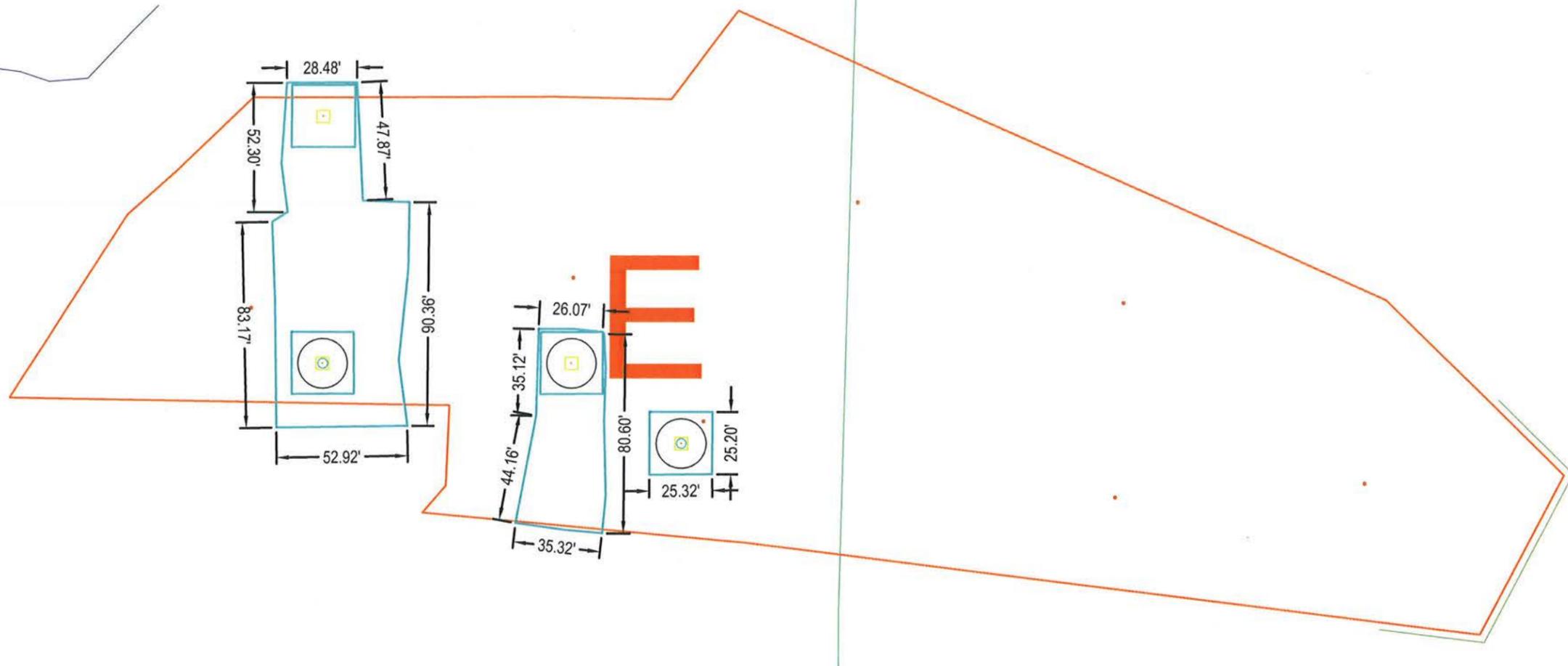
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 CREW: M. Grooms  
 DRAWN BY: P. Morton  
 CHECKED BY: R. Miller  
 DATE: October 30, 2012



*Randall Miller*  
 RANDALL D. MILLER, RLS-80880001

SHEET  
**1 of 1**

# Area "E" Haz Dig Areas



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 Fax: (260) 563-0462  
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 Fax: (574) 753-9485  
 logansport@rmasurveying.com

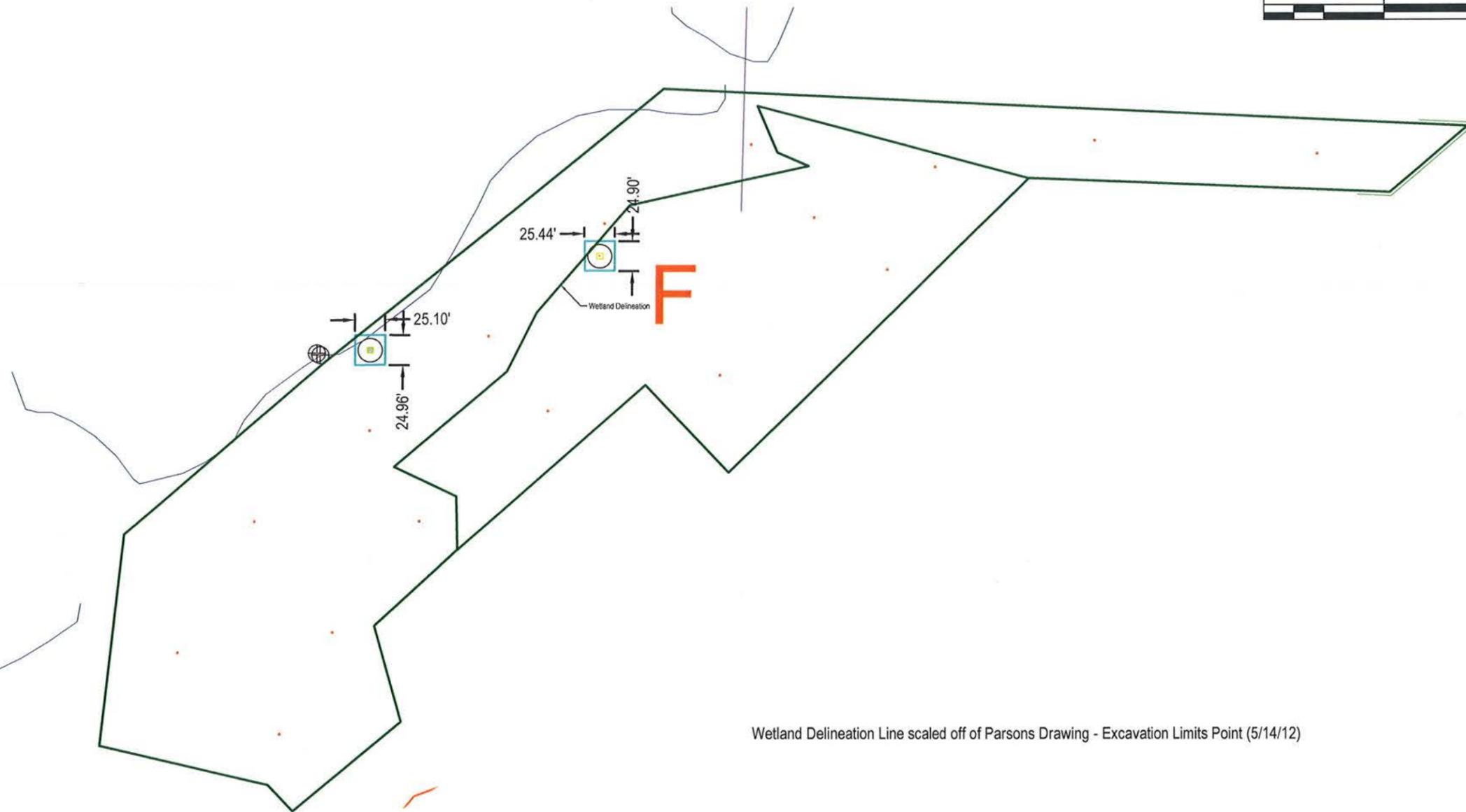
JOB NO: 12-0200  
 CREW: M. Grooms  
 DRAWN BY: P. Morton  
 CHECKED BY: R. Miller  
 DATE: October 30, 2012



*Randall Miller*  
 RANDALL D. MILLER, RLS-80880001

SHEET  
**1 of 1**

# Area "F" Haz Dig Area



Wetland Delineation Line scaled off of Parsons Drawing - Excavation Limits Point (5/14/12)

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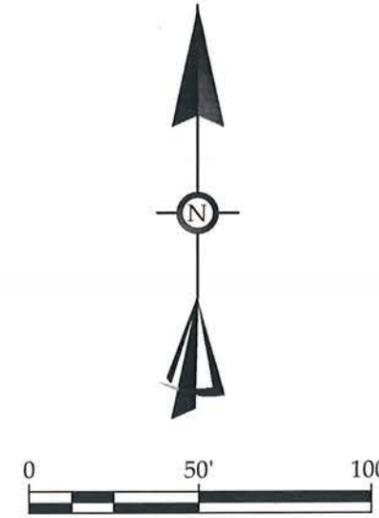
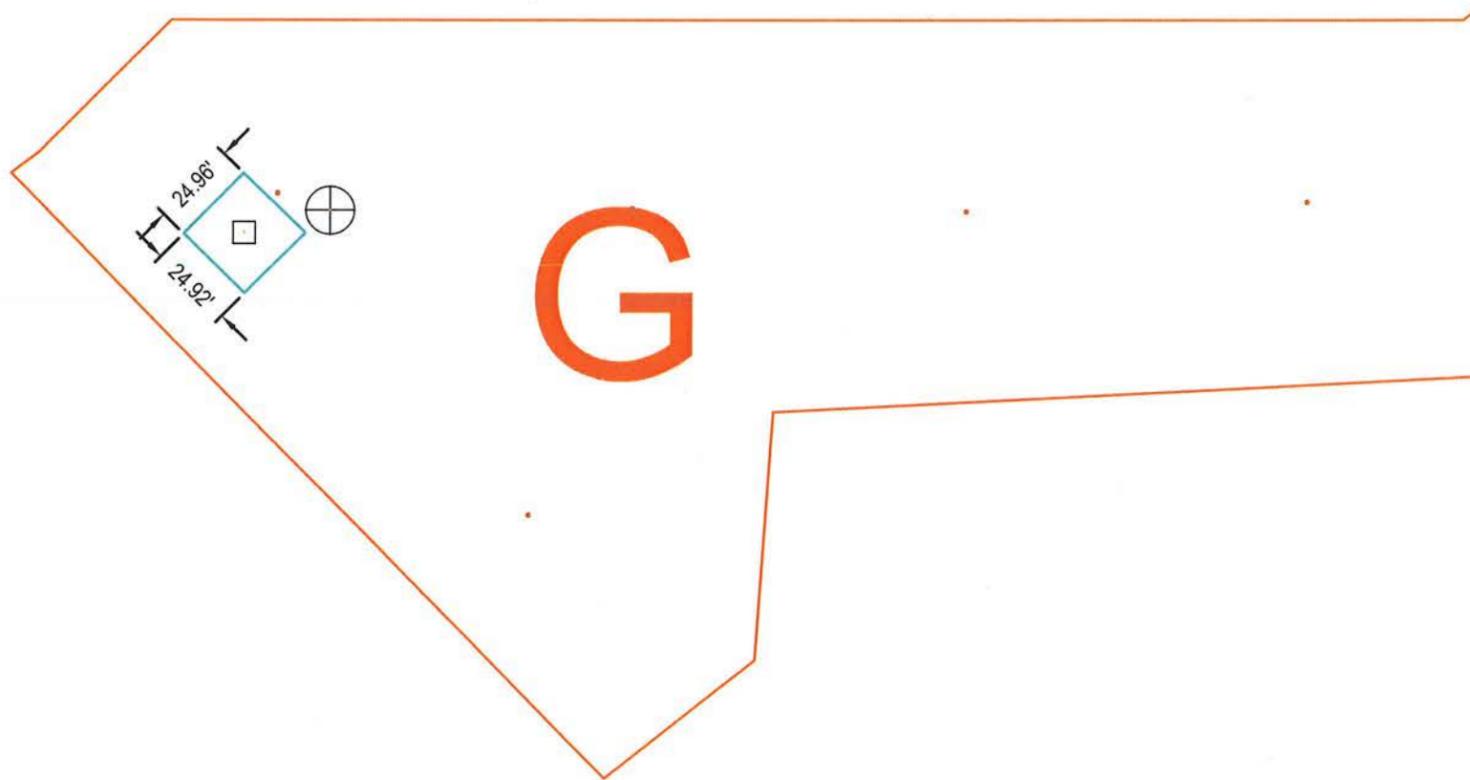
JOB NO: 12-0200  
CREW: M. Grooms  
DRAWN BY: P. Morton  
CHECKED BY: R. Miller  
DATE: October 30, 2012



*Randall Miller*  
RANDALL D. MILLER, RLS-80880001

SHEET  
**1 of 1**

# Area "G" Haz Dig Area



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Logansport, IN 46947  
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logansport@rmasurveying.com

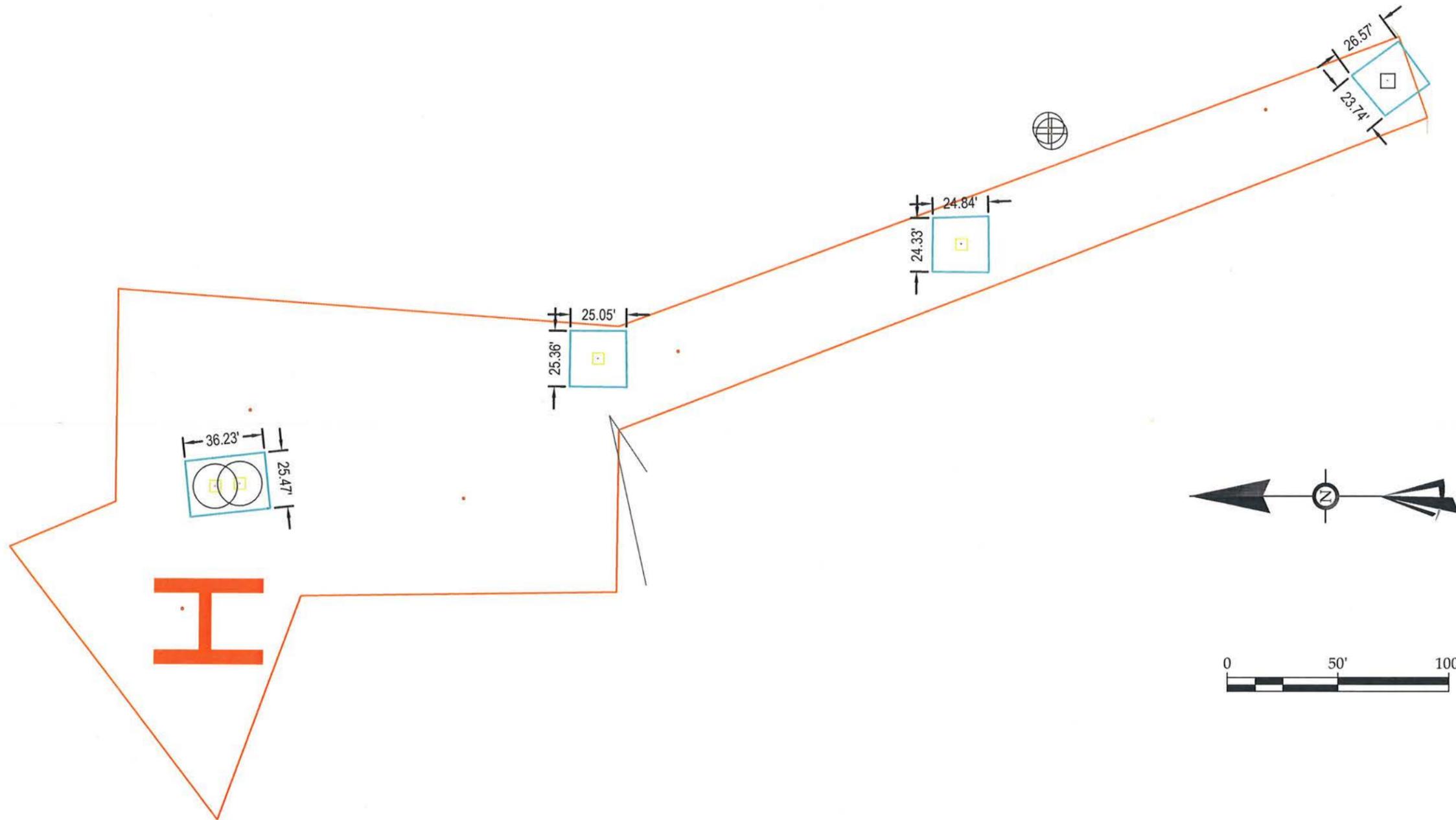
JOB NO: 12-0200  
CREW: M. Grooms  
DRAWN BY: P. Morton  
CHECKED BY: R. Miller  
DATE: October 30, 2012



*Randall Miller*  
RANDALL D. MILLER, RLS-80880001

SHEET  
**1 of 1**

# Area "H" Haz Dig Areas



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 marion@rmasurveying.com

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 Fax: (765) 289-1931  
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 Logansport, IN 46947  
 Ph: (574) 753-9353  
 Fax: (574) 753-9485  
 logansport@rmasurveying.com

JOB NO: 12-0200  
 CREW: M. Grooms  
 DRAWN BY: P. Morton  
 CHECKED BY: R. Miller  
 DATE: October 30, 2012



*Randall Miller*  
 RANDALL D. MILLER, RLS-80880001

SHEET  
**1 of 1**



December 17, 2012

**Adam Certain**

*Project & Business Development Manager*

**Summit Contracting, LLC**

5601 Progress Road  
Indianapolis, IN 46241

mobile (317) 771-5207  
phone (317) 284-0377  
fax (317) 284-0380

**RE: Dupont Project**  
Lake County, Indiana

Mr. Certain:

Per our contract with Summit Contracting, which are based upon and are subject to the requirements of Division 1 - General Requirements Section 01051 Part 1 -1.01 A (3), and of 1.03 A which in part specifically requires Randall Miller and Associates to certify that the excavated areas have reached the required depths as listed on the plans which stipulates that at least 2 foot of materials shall be removed Randall Miller and Associates hereby certifies that we have measured the existing surface prior to excavation and that the excavated areas have met or exceeded the 2 foot minimum depth.

The areas that have been measured are A, C, C', D, D', E, F, G, G', H, and I.

If you have and questions please contact me.

Respectfully,

Randall Miller, RLS  
CEO, RMA

**MARION Office**  
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Fax (260) 563-0462  
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Fax (574) 753-9485  
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**APPENDIX M  
LABORATORY ANALYTICAL REPORT  
AREA D WATER SAMPLES**



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-52167-1  
Client Project/Site: IRM Sampling

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
11/12/2012 3:20:16 PM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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QC Association . . . . .	9
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Chain of Custody . . . . .	16
Receipt Checklists . . . . .	17

# Case Narrative

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52167-1

---

**Job ID: 500-52167-1**

---

**Laboratory: TestAmerica Chicago**

---

**Narrative**

**Job Narrative**  
**500-52167-1**

**Comments**

No additional comments.

**Receipt**

The sample was received on 11/8/2012 11:45 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.9° C.

**Metals**

Method(s) 6010B: The serial dilution performed for the following sample 500-52167-1 was outside control limits for Cd and Ti.

Method(s) 6010B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for sample 500-52167-1 were outside control limits for Si. The associated laboratory control sample (LCS) recovery met acceptance criteria, therefore the data has been reported.

No other analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52167-1

**Client Sample ID: ECH-G-AREA D POND**

**Lab Sample ID: 500-52167-1**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	3.4		0.20	0.025	mg/L	1		6010B	Total/NA
Antimony	0.039		0.020	0.0026	mg/L	1		6010B	Total/NA
Arsenic	30		0.10	0.024	mg/L	10		6010B	Total/NA
Barium	0.035		0.010	0.00044	mg/L	1		6010B	Total/NA
Boron	0.25		0.050	0.024	mg/L	1		6010B	Total/NA
Cadmium	0.027	V	0.0020	0.00054	mg/L	1		6010B	Total/NA
Calcium	300		0.20	0.087	mg/L	1		6010B	Total/NA
Chromium	0.0049	J	0.010	0.00096	mg/L	1		6010B	Total/NA
Cobalt	0.0020	J	0.0050	0.0010	mg/L	1		6010B	Total/NA
Iron	12		0.20	0.070	mg/L	1		6010B	Total/NA
Lead	0.058		0.0050	0.0016	mg/L	1		6010B	Total/NA
Magnesium	18		0.10	0.024	mg/L	1		6010B	Total/NA
Nickel	0.015		0.010	0.0019	mg/L	1		6010B	Total/NA
Potassium	5.7	B	0.50	0.070	mg/L	1		6010B	Total/NA
Selenium	0.0051	J	0.010	0.0027	mg/L	1		6010B	Total/NA
Silicon	18		0.20	0.027	mg/L	1		6010B	Total/NA
Sodium	28	B	1.0	0.12	mg/L	1		6010B	Total/NA
Titanium	0.022	V	0.0050	0.00039	mg/L	1		6010B	Total/NA
Vanadium	0.014		0.0050	0.00062	mg/L	1		6010B	Total/NA
Zinc	4.6	B	0.020	0.0047	mg/L	1		6010B	Total/NA

# Method Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52167-1

---

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI

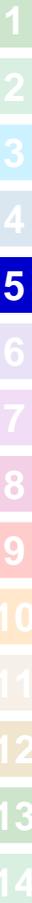
---

**Protocol References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Sample Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52167-1

---

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-52167-1	ECH-G-AREA D POND	Water	11/08/12 09:20	11/08/12 11:45

---

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# Client Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52167-1

**Client Sample ID: ECH-G-AREA D POND**

**Lab Sample ID: 500-52167-1**

Date Collected: 11/08/12 09:20

Matrix: Water

Date Received: 11/08/12 11:45

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	3.4		0.20	0.025	mg/L		11/09/12 11:30	11/10/12 19:01	1
Antimony	0.039		0.020	0.0026	mg/L		11/09/12 11:30	11/10/12 19:01	1
Arsenic	30		0.10	0.024	mg/L		11/09/12 11:30	11/12/12 12:50	10
Barium	0.035		0.010	0.00044	mg/L		11/09/12 11:30	11/10/12 19:01	1
Boron	0.25		0.050	0.024	mg/L		11/09/12 11:30	11/10/12 19:01	1
Cadmium	0.027	V	0.0020	0.00054	mg/L		11/09/12 11:30	11/10/12 19:01	1
Calcium	300		0.20	0.087	mg/L		11/09/12 11:30	11/10/12 19:01	1
Chromium	0.0049	J	0.010	0.00096	mg/L		11/09/12 11:30	11/10/12 19:01	1
Cobalt	0.0020	J	0.0050	0.0010	mg/L		11/09/12 11:30	11/10/12 19:01	1
Iron	12		0.20	0.070	mg/L		11/09/12 11:30	11/10/12 19:01	1
Lead	0.058		0.0050	0.0016	mg/L		11/09/12 11:30	11/10/12 19:01	1
Magnesium	18		0.10	0.024	mg/L		11/09/12 11:30	11/10/12 19:01	1
Nickel	0.015		0.010	0.0019	mg/L		11/09/12 11:30	11/10/12 19:01	1
Potassium	5.7	B	0.50	0.070	mg/L		11/09/12 11:30	11/10/12 19:01	1
Selenium	0.0051	J	0.010	0.0027	mg/L		11/09/12 11:30	11/10/12 19:01	1
Silicon	18		0.20	0.027	mg/L		11/09/12 11:30	11/10/12 19:01	1
Sodium	28	B	1.0	0.12	mg/L		11/09/12 11:30	11/10/12 19:01	1
Titanium	0.022	V	0.0050	0.00039	mg/L		11/09/12 11:30	11/10/12 19:01	1
Vanadium	0.014		0.0050	0.00062	mg/L		11/09/12 11:30	11/10/12 19:01	1
Zinc	4.6	B	0.020	0.0047	mg/L		11/09/12 11:30	11/10/12 19:01	1

# Definitions/Glossary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52167-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
V	Serial Dilution exceeds the control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
F	MS or MSD exceeds the control limits

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
RER	Relative error ratio
DER	Duplicate error ratio (normalized absolute difference)
DLC	Decision level concentration
RL	Reporting Limit or Requested Limit (Radiochemistry only)

# QC Association Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52167-1

## Metals

### Prep Batch: 169166

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52167-1	ECH-G-AREA D POND	Total/NA	Water	3010A	
500-52167-1 DU	ECH-G-AREA D POND	Total/NA	Water	3010A	
500-52167-1 MS	ECH-G-AREA D POND	Total/NA	Water	3010A	
500-52167-1 MSD	ECH-G-AREA D POND	Total/NA	Water	3010A	
LCS 500-169166/2-A	Lab Control Sample	Total/NA	Water	3010A	
MB 500-169166/1-A	Method Blank	Total/NA	Water	3010A	

### Analysis Batch: 169319

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52167-1	ECH-G-AREA D POND	Total/NA	Water	6010B	169166
500-52167-1 DU	ECH-G-AREA D POND	Total/NA	Water	6010B	169166
500-52167-1 MS	ECH-G-AREA D POND	Total/NA	Water	6010B	169166
500-52167-1 MSD	ECH-G-AREA D POND	Total/NA	Water	6010B	169166
LCS 500-169166/2-A	Lab Control Sample	Total/NA	Water	6010B	169166
MB 500-169166/1-A	Method Blank	Total/NA	Water	6010B	169166

### Analysis Batch: 169385

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52167-1	ECH-G-AREA D POND	Total/NA	Water	6010B	169166
500-52167-1 DU	ECH-G-AREA D POND	Total/NA	Water	6010B	169166
500-52167-1 MS	ECH-G-AREA D POND	Total/NA	Water	6010B	169166
500-52167-1 MSD	ECH-G-AREA D POND	Total/NA	Water	6010B	169166
LCS 500-169166/2-A	Lab Control Sample	Total/NA	Water	6010B	169166
MB 500-169166/1-A	Method Blank	Total/NA	Water	6010B	169166

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52167-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-169166/1-A**  
**Matrix: Water**  
**Analysis Batch: 169319**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 169166**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		0.20	0.025	mg/L		11/09/12 11:30	11/10/12 17:40	1
Antimony	ND		0.020	0.0026	mg/L		11/09/12 11:30	11/10/12 17:40	1
Barium	ND		0.010	0.00044	mg/L		11/09/12 11:30	11/10/12 17:40	1
Boron	ND		0.050	0.024	mg/L		11/09/12 11:30	11/10/12 17:40	1
Cadmium	ND		0.0020	0.00054	mg/L		11/09/12 11:30	11/10/12 17:40	1
Calcium	ND		0.20	0.087	mg/L		11/09/12 11:30	11/10/12 17:40	1
Chromium	ND		0.010	0.00096	mg/L		11/09/12 11:30	11/10/12 17:40	1
Cobalt	ND		0.0050	0.0010	mg/L		11/09/12 11:30	11/10/12 17:40	1
Iron	ND		0.20	0.070	mg/L		11/09/12 11:30	11/10/12 17:40	1
Lead	ND		0.0050	0.0016	mg/L		11/09/12 11:30	11/10/12 17:40	1
Magnesium	ND		0.10	0.024	mg/L		11/09/12 11:30	11/10/12 17:40	1
Nickel	ND		0.010	0.0019	mg/L		11/09/12 11:30	11/10/12 17:40	1
Potassium	0.121	J	0.50	0.070	mg/L		11/09/12 11:30	11/10/12 17:40	1
Selenium	ND		0.010	0.0027	mg/L		11/09/12 11:30	11/10/12 17:40	1
Silicon	ND		0.20	0.027	mg/L		11/09/12 11:30	11/10/12 17:40	1
Sodium	0.356	J	1.0	0.12	mg/L		11/09/12 11:30	11/10/12 17:40	1
Titanium	ND		0.0050	0.00039	mg/L		11/09/12 11:30	11/10/12 17:40	1
Vanadium	ND		0.0050	0.00062	mg/L		11/09/12 11:30	11/10/12 17:40	1
Zinc	0.00493	J	0.020	0.0047	mg/L		11/09/12 11:30	11/10/12 17:40	1

**Lab Sample ID: MB 500-169166/1-A**  
**Matrix: Water**  
**Analysis Batch: 169385**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 169166**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.010	0.0024	mg/L		11/09/12 11:30	11/12/12 12:43	1

**Lab Sample ID: LCS 500-169166/2-A**  
**Matrix: Water**  
**Analysis Batch: 169319**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 169166**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	2.00	1.95		mg/L		98	80 - 120
Antimony	0.500	0.497		mg/L		99	80 - 120
Barium	2.00	1.99		mg/L		99	80 - 120
Boron	1.00	0.966		mg/L		97	80 - 120
Cadmium	0.0500	0.0496		mg/L		99	80 - 120
Calcium	10.0	10.2		mg/L		102	80 - 120
Chromium	0.200	0.194		mg/L		97	80 - 120
Cobalt	0.500	0.487		mg/L		97	80 - 120
Iron	1.00	1.05		mg/L		105	80 - 120
Lead	0.100	0.0995		mg/L		100	80 - 120
Magnesium	10.0	9.75		mg/L		98	80 - 120
Nickel	0.500	0.489		mg/L		98	80 - 120
Potassium	10.0	9.93		mg/L		99	80 - 120
Selenium	0.100	0.0961		mg/L		96	80 - 120
Silicon	5.00	4.81		mg/L		96	80 - 120
Sodium	10.0	10.0		mg/L		100	80 - 120
Titanium	1.00	0.986		mg/L		99	80 - 120
Vanadium	0.500	0.500		mg/L		100	80 - 120

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52167-1

## Method: 6010B - Metals (ICP) (Continued)

**Lab Sample ID: LCS 500-169166/2-A**  
**Matrix: Water**  
**Analysis Batch: 169319**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 169166**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	0.500	0.489		mg/L		98	80 - 120

**Lab Sample ID: LCS 500-169166/2-A**  
**Matrix: Water**  
**Analysis Batch: 169385**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 169166**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.100	0.0941		mg/L		94	80 - 120

**Lab Sample ID: 500-52167-1 MS**  
**Matrix: Water**  
**Analysis Batch: 169319**

**Client Sample ID: ECH-G-AREA D POND**  
**Prep Type: Total/NA**  
**Prep Batch: 169166**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	3.4		2.00	5.31		mg/L		97	75 - 125
Antimony	0.039		0.500	0.524		mg/L		97	75 - 125
Barium	0.035		2.00	1.99		mg/L		98	75 - 125
Boron	0.25		1.00	1.20		mg/L		94	75 - 125
Cadmium	0.027	V	0.0500	0.0777		mg/L		101	75 - 125
Calcium	300		10.0	318	4	mg/L		128	75 - 125
Chromium	0.0049	J	0.200	0.191		mg/L		93	75 - 125
Cobalt	0.0020	J	0.500	0.490		mg/L		98	75 - 125
Iron	12		1.00	13.0	4	mg/L		106	75 - 125
Lead	0.058		0.100	0.163		mg/L		105	75 - 125
Magnesium	18		10.0	28.0		mg/L		100	75 - 125
Nickel	0.015		0.500	0.493		mg/L		96	75 - 125
Potassium	5.7	B	10.0	15.9		mg/L		101	75 - 125
Selenium	0.0051	J	0.100	0.0995		mg/L		94	75 - 125
Silicon	18		5.00	24.8	F	mg/L		132	75 - 125
Sodium	28	B	10.0	39.0		mg/L		107	75 - 125
Titanium	0.022	V	1.00	0.988		mg/L		97	75 - 125
Vanadium	0.014		0.500	0.500		mg/L		97	75 - 125
Zinc	4.6	B	0.500	5.14	4	mg/L		112	75 - 125

**Lab Sample ID: 500-52167-1 MS**  
**Matrix: Water**  
**Analysis Batch: 169385**

**Client Sample ID: ECH-G-AREA D POND**  
**Prep Type: Total/NA**  
**Prep Batch: 169166**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	30		0.100	30.6	4	mg/L		1021	75 - 125

**Lab Sample ID: 500-52167-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 169319**

**Client Sample ID: ECH-G-AREA D POND**  
**Prep Type: Total/NA**  
**Prep Batch: 169166**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	3.4		2.00	5.36		mg/L		100	75 - 125	1	20
Antimony	0.039		0.500	0.531		mg/L		98	75 - 125	1	20
Barium	0.035		2.00	2.02		mg/L		99	75 - 125	2	20
Boron	0.25		1.00	1.21		mg/L		95	75 - 125	1	20
Cadmium	0.027	V	0.0500	0.0796		mg/L		105	75 - 125	3	20

# QC Sample Results

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52167-1

## Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: 500-52167-1 MSD

Matrix: Water

Analysis Batch: 169319

Client Sample ID: ECH-G-AREA D POND

Prep Type: Total/NA

Prep Batch: 169166

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
Calcium	300		10.0	321	4	mg/L		161	75 - 125	1	20
Chromium	0.0049	J	0.200	0.193		mg/L		94	75 - 125	1	20
Cobalt	0.0020	J	0.500	0.497		mg/L		99	75 - 125	1	20
Iron	12		1.00	13.2	4	mg/L		123	75 - 125	1	20
Lead	0.058		0.100	0.163		mg/L		105	75 - 125	0	20
Magnesium	18		10.0	28.4		mg/L		103	75 - 125	1	20
Nickel	0.015		0.500	0.498		mg/L		97	75 - 125	1	20
Potassium	5.7	B	10.0	16.0		mg/L		103	75 - 125	1	20
Selenium	0.0051	J	0.100	0.0985		mg/L		93	75 - 125	1	20
Silicon	18		5.00	24.5	F	mg/L		127	75 - 125	1	20
Sodium	28	B	10.0	39.4		mg/L		110	75 - 125	1	20
Titanium	0.022	V	1.00	1.00		mg/L		98	75 - 125	1	20
Vanadium	0.014		0.500	0.506		mg/L		98	75 - 125	1	20
Zinc	4.6	B	0.500	5.16	4	mg/L		115	75 - 125	0	20

Lab Sample ID: 500-52167-1 MSD

Matrix: Water

Analysis Batch: 169385

Client Sample ID: ECH-G-AREA D POND

Prep Type: Total/NA

Prep Batch: 169166

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
Arsenic	30		0.100	30.4	4	mg/L		790	75 - 125	1	20

Lab Sample ID: 500-52167-1 DU

Matrix: Water

Analysis Batch: 169319

Client Sample ID: ECH-G-AREA D POND

Prep Type: Total/NA

Prep Batch: 169166

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier		Qualifier				
Aluminum	3.4		3.45		mg/L		3	20
Antimony	0.039		0.0390		mg/L		0.9	20
Barium	0.035		0.0414		mg/L		15	20
Boron	0.25		0.258		mg/L		2	20
Cadmium	0.027	V	0.0271		mg/L		1	20
Calcium	300		309		mg/L		1	20
Chromium	0.0049	J	0.00524	J	mg/L		6	20
Cobalt	0.0020	J	0.00171	J	mg/L		15	20
Iron	12		12.2		mg/L		2	20
Lead	0.058		0.0624		mg/L		7	20
Magnesium	18		18.2		mg/L		0.9	20
Nickel	0.015		0.0149		mg/L		2	20
Potassium	5.7	B	5.88		mg/L		3	20
Selenium	0.0051	J	0.00363	J	mg/L		34	20
Silicon	18		20.7		mg/L		13	20
Sodium	28	B	29.1		mg/L		3	20
Titanium	0.022	V	0.0228		mg/L		3	20
Vanadium	0.014		0.0144		mg/L		4	20
Zinc	4.6	B	4.67		mg/L		2	20

# QC Sample Results

Client: URS Corporation  
 Project/Site: IRM Sampling

TestAmerica Job ID: 500-52167-1

## Method: 6010B - Metals (ICP) (Continued)

**Lab Sample ID: 500-52167-1 DU**  
**Matrix: Water**  
**Analysis Batch: 169385**

**Client Sample ID: ECH-G-AREA D POND**  
**Prep Type: Total/NA**  
**Prep Batch: 169166**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Arsenic	30		30.8		mg/L		4	20

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# Lab Chronicle

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52167-1

**Client Sample ID: ECH-G-AREA D POND**

**Lab Sample ID: 500-52167-1**

**Date Collected: 11/08/12 09:20**

**Matrix: Water**

**Date Received: 11/08/12 11:45**

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Prep	3010A			169166	11/09/12 11:30	RL	TAL CHI
Total/NA	Analysis	6010B		1	169319	11/10/12 19:01	PJ	TAL CHI
Total/NA	Analysis	6010B		10	169385	11/12/12 12:50	PJ	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

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# Certification Summary

Client: URS Corporation  
Project/Site: IRM Sampling

TestAmerica Job ID: 500-52167-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13



## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-52167-1

**Login Number: 52167**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Scott, Sherri L**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.9
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

TestAmerica Job ID: 500-52363-1  
Client Project/Site: Storm Pipe Sampling 2012

For:  
URS Corporation  
C/O Dupont  
Iron Hill Corporate Center  
4051 Ogletown Road, Suite 300  
Newark, Delaware 19713

Attn: Ms. Wanda Davis



Authorized for release by:  
11/20/2012 10:59:59 AM

Richard Wright  
Project Manager II  
[richard.wright@testamericainc.com](mailto:richard.wright@testamericainc.com)

### LINKS

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Have a Question?



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[www.testamericainc.com](http://www.testamericainc.com)

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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: URS Corporation  
Project/Site: Storm Pipe Sampling 2012

TestAmerica Job ID: 500-52363-1

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**Job ID: 500-52363-1**

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**Laboratory: TestAmerica Chicago**

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**Narrative**

**Job Narrative**  
**500-52363-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 11/14/2012 3:35 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.0° C.

**Metals**

No analytical or quality issues were noted.

**Field Service / Mobile Lab**

No analytical or quality issues were noted.

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# Detection Summary

Client: URS Corporation  
Project/Site: Storm Pipe Sampling 2012

TestAmerica Job ID: 500-52363-1

## Client Sample ID: ECH-G-AREA D POOL

## Lab Sample ID: 500-52363-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	0.27		0.20	0.025	mg/L		1	6010B	Total/NA
Antimony	0.021		0.020	0.0026	mg/L		1	6010B	Total/NA
Arsenic	2.5		0.010	0.0024	mg/L		1	6010B	Total/NA
Barium	0.033		0.010	0.00044	mg/L		1	6010B	Total/NA
Boron	0.30		0.050	0.024	mg/L		1	6010B	Total/NA
Cadmium	0.0065		0.0020	0.00054	mg/L		1	6010B	Total/NA
Calcium	380		0.20	0.087	mg/L		1	6010B	Total/NA
Chromium	0.0011	J	0.010	0.00096	mg/L		1	6010B	Total/NA
Cobalt	0.0031	J	0.0050	0.0010	mg/L		1	6010B	Total/NA
Iron	2.7		0.20	0.070	mg/L		1	6010B	Total/NA
Lead	0.012		0.0050	0.0016	mg/L		1	6010B	Total/NA
Magnesium	19		0.10	0.024	mg/L		1	6010B	Total/NA
Nickel	0.011		0.010	0.0019	mg/L		1	6010B	Total/NA
Potassium	5.8		0.50	0.070	mg/L		1	6010B	Total/NA
Selenium	0.0034	J B	0.010	0.0027	mg/L		1	6010B	Total/NA
Silicon	19		0.20	0.027	mg/L		1	6010B	Total/NA
Sodium	63		1.0	0.12	mg/L		1	6010B	Total/NA
Titanium	0.0044	J	0.0050	0.00039	mg/L		1	6010B	Total/NA
Vanadium	0.0017	J	0.0050	0.00062	mg/L		1	6010B	Total/NA
Zinc	1.4		0.020	0.0047	mg/L		1	6010B	Total/NA

## Client Sample ID: ECH-G-AREA D POOL DIS

## Lab Sample ID: 500-52363-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	0.13	J	0.20	0.025	mg/L		1	6010B	Dissolved
Antimony	0.021		0.020	0.0026	mg/L		1	6010B	Dissolved
Arsenic	1.1		0.010	0.0024	mg/L		1	6010B	Dissolved
Barium	0.032		0.010	0.00044	mg/L		1	6010B	Dissolved
Boron	0.31		0.050	0.024	mg/L		1	6010B	Dissolved
Cadmium	0.0036		0.0020	0.00054	mg/L		1	6010B	Dissolved
Calcium	390		0.20	0.087	mg/L		1	6010B	Dissolved
Cobalt	0.0030	J	0.0050	0.0010	mg/L		1	6010B	Dissolved
Iron	0.18	J	0.20	0.070	mg/L		1	6010B	Dissolved
Lead	0.0024	J	0.0050	0.0016	mg/L		1	6010B	Dissolved
Magnesium	20		0.10	0.024	mg/L		1	6010B	Dissolved
Nickel	0.012		0.010	0.0019	mg/L		1	6010B	Dissolved
Potassium	6.0		0.50	0.070	mg/L		1	6010B	Dissolved
Selenium	0.0047	J B	0.010	0.0027	mg/L		1	6010B	Dissolved
Silicon	19		0.20	0.027	mg/L		1	6010B	Dissolved
Sodium	64		1.0	0.12	mg/L		1	6010B	Dissolved
Titanium	0.0033	J	0.0050	0.00039	mg/L		1	6010B	Dissolved
Vanadium	0.00097	J	0.0050	0.00062	mg/L		1	6010B	Dissolved
Zinc	1.3		0.020	0.0047	mg/L		1	6010B	Dissolved

## Client Sample ID: ECH-G-AREA D PIPE

## Lab Sample ID: 500-52363-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	4.3		0.20	0.025	mg/L		1	6010B	Total/NA
Antimony	0.099		0.020	0.0026	mg/L		1	6010B	Total/NA
Arsenic	54		0.10	0.024	mg/L		10	6010B	Total/NA
Barium	0.059		0.010	0.00044	mg/L		1	6010B	Total/NA
Boron	0.27		0.050	0.024	mg/L		1	6010B	Total/NA

TestAmerica Chicago

# Detection Summary

Client: URS Corporation  
 Project/Site: Storm Pipe Sampling 2012

TestAmerica Job ID: 500-52363-1

## Client Sample ID: ECH-G-AREA D PIPE (Continued)

Lab Sample ID: 500-52363-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	0.15		0.0020	0.00054	mg/L	1		6010B	Total/NA
Calcium	300		0.20	0.087	mg/L	1		6010B	Total/NA
Chromium	0.0088	J	0.010	0.00096	mg/L	1		6010B	Total/NA
Cobalt	0.0026	J	0.0050	0.0010	mg/L	1		6010B	Total/NA
Iron	14		0.20	0.070	mg/L	1		6010B	Total/NA
Lead	0.19		0.0050	0.0016	mg/L	1		6010B	Total/NA
Magnesium	20		0.10	0.024	mg/L	1		6010B	Total/NA
Nickel	0.0095	J	0.010	0.0019	mg/L	1		6010B	Total/NA
Potassium	5.1		0.50	0.070	mg/L	1		6010B	Total/NA
Selenium	0.0096	J B	0.010	0.0027	mg/L	1		6010B	Total/NA
Silicon	23		0.20	0.027	mg/L	1		6010B	Total/NA
Sodium	16		1.0	0.12	mg/L	1		6010B	Total/NA
Titanium	0.056		0.0050	0.00039	mg/L	1		6010B	Total/NA
Vanadium	0.023		0.0050	0.00062	mg/L	1		6010B	Total/NA
Zinc	2.7		0.020	0.0047	mg/L	1		6010B	Total/NA

## Client Sample ID: ECH-G-AREA D PIPE DIS

Lab Sample ID: 500-52363-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	2.9		0.20	0.025	mg/L	1		6010B	Dissolved
Antimony	0.065		0.020	0.0026	mg/L	1		6010B	Dissolved
Arsenic	46		0.10	0.024	mg/L	10		6010B	Dissolved
Barium	0.026		0.010	0.00044	mg/L	1		6010B	Dissolved
Boron	0.27		0.050	0.024	mg/L	1		6010B	Dissolved
Cadmium	0.11		0.0020	0.00054	mg/L	1		6010B	Dissolved
Calcium	300		0.20	0.087	mg/L	1		6010B	Dissolved
Chromium	0.0030	J	0.010	0.00096	mg/L	1		6010B	Dissolved
Cobalt	0.0023	J	0.0050	0.0010	mg/L	1		6010B	Dissolved
Iron	12		0.20	0.070	mg/L	1		6010B	Dissolved
Lead	0.0038	J	0.0050	0.0016	mg/L	1		6010B	Dissolved
Magnesium	20		0.10	0.024	mg/L	1		6010B	Dissolved
Nickel	0.0090	J	0.010	0.0019	mg/L	1		6010B	Dissolved
Potassium	5.1		0.50	0.070	mg/L	1		6010B	Dissolved
Selenium	0.0063	J B	0.010	0.0027	mg/L	1		6010B	Dissolved
Silicon	22		0.20	0.027	mg/L	1		6010B	Dissolved
Sodium	16		1.0	0.12	mg/L	1		6010B	Dissolved
Titanium	0.0035	J	0.0050	0.00039	mg/L	1		6010B	Dissolved
Vanadium	0.015		0.0050	0.00062	mg/L	1		6010B	Dissolved
Zinc	2.4		0.020	0.0047	mg/L	1		6010B	Dissolved

# Method Summary

Client: URS Corporation  
Project/Site: Storm Pipe Sampling 2012

TestAmerica Job ID: 500-52363-1

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Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CHI

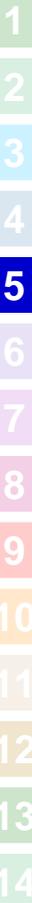
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**Protocol References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



# Sample Summary

Client: URS Corporation  
Project/Site: Storm Pipe Sampling 2012

TestAmerica Job ID: 500-52363-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-52363-1	ECH-G-AREA D POOL	Water	11/14/12 09:15	11/14/12 15:35
500-52363-2	ECH-G-AREA D POOL DIS	Water	11/14/12 09:15	11/14/12 15:35
500-52363-3	ECH-G-AREA D PIPE	Water	11/14/12 13:30	11/14/12 15:35
500-52363-4	ECH-G-AREA D PIPE DIS	Water	11/14/12 13:30	11/14/12 15:35

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# Client Sample Results

Client: URS Corporation  
 Project/Site: Storm Pipe Sampling 2012

TestAmerica Job ID: 500-52363-1

**Client Sample ID: ECH-G-AREA D POOL**

**Lab Sample ID: 500-52363-1**

**Date Collected: 11/14/12 09:15**

**Matrix: Water**

**Date Received: 11/14/12 15:35**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.27		0.20	0.025	mg/L		11/15/12 15:00	11/19/12 14:20	1
Antimony	0.021		0.020	0.0026	mg/L		11/15/12 15:00	11/19/12 14:20	1
Arsenic	2.5		0.010	0.0024	mg/L		11/15/12 15:00	11/19/12 14:20	1
Barium	0.033		0.010	0.00044	mg/L		11/15/12 15:00	11/19/12 14:20	1
Boron	0.30		0.050	0.024	mg/L		11/15/12 15:00	11/19/12 14:20	1
Cadmium	0.0065		0.0020	0.00054	mg/L		11/15/12 15:00	11/19/12 14:20	1
Calcium	380		0.20	0.087	mg/L		11/15/12 15:00	11/19/12 14:20	1
Chromium	0.0011	J	0.010	0.00096	mg/L		11/15/12 15:00	11/19/12 14:20	1
Cobalt	0.0031	J	0.0050	0.0010	mg/L		11/15/12 15:00	11/19/12 14:20	1
Iron	2.7		0.20	0.070	mg/L		11/15/12 15:00	11/19/12 14:20	1
Lead	0.012		0.0050	0.0016	mg/L		11/15/12 15:00	11/19/12 14:20	1
Magnesium	19		0.10	0.024	mg/L		11/15/12 15:00	11/19/12 14:20	1
Nickel	0.011		0.010	0.0019	mg/L		11/15/12 15:00	11/19/12 14:20	1
Potassium	5.8		0.50	0.070	mg/L		11/15/12 15:00	11/19/12 14:20	1
Selenium	0.0034	J B	0.010	0.0027	mg/L		11/15/12 15:00	11/19/12 14:20	1
Silicon	19		0.20	0.027	mg/L		11/15/12 15:00	11/19/12 14:20	1
Sodium	63		1.0	0.12	mg/L		11/15/12 15:00	11/19/12 14:20	1
Titanium	0.0044	J	0.0050	0.00039	mg/L		11/15/12 15:00	11/19/12 14:20	1
Vanadium	0.0017	J	0.0050	0.00062	mg/L		11/15/12 15:00	11/19/12 14:20	1
Zinc	1.4		0.020	0.0047	mg/L		11/15/12 15:00	11/19/12 14:20	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: Storm Pipe Sampling 2012

TestAmerica Job ID: 500-52363-1

**Client Sample ID: ECH-G-AREA D POOL DIS**

**Lab Sample ID: 500-52363-2**

Date Collected: 11/14/12 09:15

Matrix: Water

Date Received: 11/14/12 15:35

**Method: 6010B - Metals (ICP) - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.13	J	0.20	0.025	mg/L		11/15/12 15:00	11/19/12 14:24	1
Antimony	0.021		0.020	0.0026	mg/L		11/15/12 15:00	11/19/12 14:24	1
Arsenic	1.1		0.010	0.0024	mg/L		11/15/12 15:00	11/19/12 14:24	1
Barium	0.032		0.010	0.00044	mg/L		11/15/12 15:00	11/19/12 14:24	1
Boron	0.31		0.050	0.024	mg/L		11/15/12 15:00	11/19/12 14:24	1
Cadmium	0.0036		0.0020	0.00054	mg/L		11/15/12 15:00	11/19/12 14:24	1
Calcium	390		0.20	0.087	mg/L		11/15/12 15:00	11/19/12 14:24	1
Chromium	ND		0.010	0.00096	mg/L		11/15/12 15:00	11/19/12 14:24	1
Cobalt	0.0030	J	0.0050	0.0010	mg/L		11/15/12 15:00	11/19/12 14:24	1
Iron	0.18	J	0.20	0.070	mg/L		11/15/12 15:00	11/19/12 14:24	1
Lead	0.0024	J	0.0050	0.0016	mg/L		11/15/12 15:00	11/19/12 14:24	1
Magnesium	20		0.10	0.024	mg/L		11/15/12 15:00	11/19/12 14:24	1
Nickel	0.012		0.010	0.0019	mg/L		11/15/12 15:00	11/19/12 14:24	1
Potassium	6.0		0.50	0.070	mg/L		11/15/12 15:00	11/19/12 14:24	1
Selenium	0.0047	J B	0.010	0.0027	mg/L		11/15/12 15:00	11/19/12 14:24	1
Silicon	19		0.20	0.027	mg/L		11/15/12 15:00	11/19/12 14:24	1
Sodium	64		1.0	0.12	mg/L		11/15/12 15:00	11/19/12 14:24	1
Titanium	0.0033	J	0.0050	0.00039	mg/L		11/15/12 15:00	11/19/12 14:24	1
Vanadium	0.00097	J	0.0050	0.00062	mg/L		11/15/12 15:00	11/19/12 14:24	1
Zinc	1.3		0.020	0.0047	mg/L		11/15/12 15:00	11/19/12 14:24	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: Storm Pipe Sampling 2012

TestAmerica Job ID: 500-52363-1

**Client Sample ID: ECH-G-AREA D PIPE**

**Lab Sample ID: 500-52363-3**

**Date Collected: 11/14/12 13:30**

**Matrix: Water**

**Date Received: 11/14/12 15:35**

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	4.3		0.20	0.025	mg/L		11/15/12 15:00	11/19/12 14:29	1
Antimony	0.099		0.020	0.0026	mg/L		11/15/12 15:00	11/19/12 14:29	1
Arsenic	54		0.10	0.024	mg/L		11/15/12 15:00	11/19/12 16:03	10
Barium	0.059		0.010	0.00044	mg/L		11/15/12 15:00	11/19/12 14:29	1
Boron	0.27		0.050	0.024	mg/L		11/15/12 15:00	11/19/12 14:29	1
Cadmium	0.15		0.0020	0.00054	mg/L		11/15/12 15:00	11/19/12 14:29	1
Calcium	300		0.20	0.087	mg/L		11/15/12 15:00	11/19/12 14:29	1
Chromium	0.0088	J	0.010	0.00096	mg/L		11/15/12 15:00	11/19/12 14:29	1
Cobalt	0.0026	J	0.0050	0.0010	mg/L		11/15/12 15:00	11/19/12 14:29	1
Iron	14		0.20	0.070	mg/L		11/15/12 15:00	11/19/12 14:29	1
Lead	0.19		0.0050	0.0016	mg/L		11/15/12 15:00	11/19/12 14:29	1
Magnesium	20		0.10	0.024	mg/L		11/15/12 15:00	11/19/12 14:29	1
Nickel	0.0095	J	0.010	0.0019	mg/L		11/15/12 15:00	11/19/12 14:29	1
Potassium	5.1		0.50	0.070	mg/L		11/15/12 15:00	11/19/12 14:29	1
Selenium	0.0096	J B	0.010	0.0027	mg/L		11/15/12 15:00	11/19/12 14:29	1
Silicon	23		0.20	0.027	mg/L		11/15/12 15:00	11/19/12 14:29	1
Sodium	16		1.0	0.12	mg/L		11/15/12 15:00	11/19/12 14:29	1
Titanium	0.056		0.0050	0.00039	mg/L		11/15/12 15:00	11/19/12 14:29	1
Vanadium	0.023		0.0050	0.00062	mg/L		11/15/12 15:00	11/19/12 14:29	1
Zinc	2.7		0.020	0.0047	mg/L		11/15/12 15:00	11/19/12 14:29	1

# Client Sample Results

Client: URS Corporation  
 Project/Site: Storm Pipe Sampling 2012

TestAmerica Job ID: 500-52363-1

**Client Sample ID: ECH-G-AREA D PIPE DIS**

**Lab Sample ID: 500-52363-4**

Date Collected: 11/14/12 13:30

Matrix: Water

Date Received: 11/14/12 15:35

**Method: 6010B - Metals (ICP) - Dissolved**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	2.9		0.20	0.025	mg/L		11/15/12 15:00	11/19/12 14:33	1
Antimony	0.065		0.020	0.0026	mg/L		11/15/12 15:00	11/19/12 14:33	1
Arsenic	46		0.10	0.024	mg/L		11/15/12 15:00	11/19/12 16:07	10
Barium	0.026		0.010	0.00044	mg/L		11/15/12 15:00	11/19/12 14:33	1
Boron	0.27		0.050	0.024	mg/L		11/15/12 15:00	11/19/12 14:33	1
Cadmium	0.11		0.0020	0.00054	mg/L		11/15/12 15:00	11/19/12 14:33	1
Calcium	300		0.20	0.087	mg/L		11/15/12 15:00	11/19/12 14:33	1
Chromium	0.0030	J	0.010	0.00096	mg/L		11/15/12 15:00	11/19/12 14:33	1
Cobalt	0.0023	J	0.0050	0.0010	mg/L		11/15/12 15:00	11/19/12 14:33	1
Iron	12		0.20	0.070	mg/L		11/15/12 15:00	11/19/12 14:33	1
Lead	0.0038	J	0.0050	0.0016	mg/L		11/15/12 15:00	11/19/12 14:33	1
Magnesium	20		0.10	0.024	mg/L		11/15/12 15:00	11/19/12 14:33	1
Nickel	0.0090	J	0.010	0.0019	mg/L		11/15/12 15:00	11/19/12 14:33	1
Potassium	5.1		0.50	0.070	mg/L		11/15/12 15:00	11/19/12 14:33	1
Selenium	0.0063	J B	0.010	0.0027	mg/L		11/15/12 15:00	11/19/12 14:33	1
Silicon	22		0.20	0.027	mg/L		11/15/12 15:00	11/19/12 14:33	1
Sodium	16		1.0	0.12	mg/L		11/15/12 15:00	11/19/12 14:33	1
Titanium	0.0035	J	0.0050	0.00039	mg/L		11/15/12 15:00	11/19/12 14:33	1
Vanadium	0.015		0.0050	0.00062	mg/L		11/15/12 15:00	11/19/12 14:33	1
Zinc	2.4		0.020	0.0047	mg/L		11/15/12 15:00	11/19/12 14:33	1

# Definitions/Glossary

Client: URS Corporation  
Project/Site: Storm Pipe Sampling 2012

TestAmerica Job ID: 500-52363-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: URS Corporation  
 Project/Site: Storm Pipe Sampling 2012

TestAmerica Job ID: 500-52363-1

## Metals

### Prep Batch: 169906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52363-1	ECH-G-AREA D POOL	Total/NA	Water	3010A	
500-52363-2	ECH-G-AREA D POOL DIS	Dissolved	Water	3010A	
500-52363-3	ECH-G-AREA D PIPE	Total/NA	Water	3010A	
500-52363-4	ECH-G-AREA D PIPE DIS	Dissolved	Water	3010A	
LCS 500-169906/2-A	Lab Control Sample	Total/NA	Water	3010A	
MB 500-169906/1-A	Method Blank	Total/NA	Water	3010A	

### Analysis Batch: 170303

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-52363-1	ECH-G-AREA D POOL	Total/NA	Water	6010B	169906
500-52363-2	ECH-G-AREA D POOL DIS	Dissolved	Water	6010B	169906
500-52363-3	ECH-G-AREA D PIPE	Total/NA	Water	6010B	169906
500-52363-3	ECH-G-AREA D PIPE	Total/NA	Water	6010B	169906
500-52363-4	ECH-G-AREA D PIPE DIS	Dissolved	Water	6010B	169906
500-52363-4	ECH-G-AREA D PIPE DIS	Dissolved	Water	6010B	169906
LCS 500-169906/2-A	Lab Control Sample	Total/NA	Water	6010B	169906
MB 500-169906/1-A	Method Blank	Total/NA	Water	6010B	169906



# QC Sample Results

Client: URS Corporation  
Project/Site: Storm Pipe Sampling 2012

TestAmerica Job ID: 500-52363-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-169906/1-A**  
**Matrix: Water**  
**Analysis Batch: 170303**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 169906**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		0.20	0.025	mg/L		11/15/12 15:00	11/19/12 14:12	1
Antimony	ND		0.020	0.0026	mg/L		11/15/12 15:00	11/19/12 14:12	1
Arsenic	ND		0.010	0.0024	mg/L		11/15/12 15:00	11/19/12 14:12	1
Barium	ND		0.010	0.00044	mg/L		11/15/12 15:00	11/19/12 14:12	1
Boron	ND		0.050	0.024	mg/L		11/15/12 15:00	11/19/12 14:12	1
Cadmium	ND		0.0020	0.00054	mg/L		11/15/12 15:00	11/19/12 14:12	1
Calcium	ND		0.20	0.087	mg/L		11/15/12 15:00	11/19/12 14:12	1
Chromium	ND		0.010	0.00096	mg/L		11/15/12 15:00	11/19/12 14:12	1
Cobalt	ND		0.0050	0.0010	mg/L		11/15/12 15:00	11/19/12 14:12	1
Iron	ND		0.20	0.070	mg/L		11/15/12 15:00	11/19/12 14:12	1
Lead	ND		0.0050	0.0016	mg/L		11/15/12 15:00	11/19/12 14:12	1
Magnesium	ND		0.10	0.024	mg/L		11/15/12 15:00	11/19/12 14:12	1
Nickel	ND		0.010	0.0019	mg/L		11/15/12 15:00	11/19/12 14:12	1
Potassium	ND		0.50	0.070	mg/L		11/15/12 15:00	11/19/12 14:12	1
Selenium	0.00389	J	0.010	0.0027	mg/L		11/15/12 15:00	11/19/12 14:12	1
Silicon	ND		0.20	0.027	mg/L		11/15/12 15:00	11/19/12 14:12	1
Sodium	ND		1.0	0.12	mg/L		11/15/12 15:00	11/19/12 14:12	1
Titanium	ND		0.0050	0.00039	mg/L		11/15/12 15:00	11/19/12 14:12	1
Vanadium	ND		0.0050	0.00062	mg/L		11/15/12 15:00	11/19/12 14:12	1
Zinc	ND		0.020	0.0047	mg/L		11/15/12 15:00	11/19/12 14:12	1

**Lab Sample ID: LCS 500-169906/2-A**  
**Matrix: Water**  
**Analysis Batch: 170303**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 169906**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	2.00	1.91		mg/L		96	80 - 120
Antimony	0.500	0.489		mg/L		98	80 - 120
Arsenic	0.100	0.0971		mg/L		97	80 - 120
Barium	2.00	2.00		mg/L		100	80 - 120
Boron	1.00	0.947		mg/L		95	80 - 120
Cadmium	0.0500	0.0492		mg/L		98	80 - 120
Calcium	10.0	10.1		mg/L		101	80 - 120
Chromium	0.200	0.196		mg/L		98	80 - 120
Cobalt	0.500	0.496		mg/L		99	80 - 120
Iron	1.00	1.04		mg/L		104	80 - 120
Lead	0.100	0.0970		mg/L		97	80 - 120
Magnesium	10.0	9.60		mg/L		96	80 - 120
Nickel	0.500	0.490		mg/L		98	80 - 120
Potassium	10.0	9.73		mg/L		97	80 - 120
Selenium	0.100	0.0964		mg/L		96	80 - 120
Silicon	5.00	4.95		mg/L		99	80 - 120
Sodium	10.0	10.1		mg/L		101	80 - 120
Titanium	1.00	0.992		mg/L		99	80 - 120
Vanadium	0.500	0.500		mg/L		100	80 - 120
Zinc	0.500	0.489		mg/L		98	80 - 120

TestAmerica Chicago

# Lab Chronicle

Client: URS Corporation  
 Project/Site: Storm Pipe Sampling 2012

TestAmerica Job ID: 500-52363-1

## Client Sample ID: ECH-G-AREA D POOL

Lab Sample ID: 500-52363-1

Date Collected: 11/14/12 09:15

Matrix: Water

Date Received: 11/14/12 15:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			169906	11/15/12 15:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	170303	11/19/12 14:20	TDS	TAL CHI

## Client Sample ID: ECH-G-AREA D POOL DIS

Lab Sample ID: 500-52363-2

Date Collected: 11/14/12 09:15

Matrix: Water

Date Received: 11/14/12 15:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			169906	11/15/12 15:00	RL	TAL CHI
Dissolved	Analysis	6010B		1	170303	11/19/12 14:24	TDS	TAL CHI

## Client Sample ID: ECH-G-AREA D PIPE

Lab Sample ID: 500-52363-3

Date Collected: 11/14/12 13:30

Matrix: Water

Date Received: 11/14/12 15:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			169906	11/15/12 15:00	RL	TAL CHI
Total/NA	Analysis	6010B		1	170303	11/19/12 14:29	TDS	TAL CHI
Total/NA	Analysis	6010B		10	170303	11/19/12 16:03	TDS	TAL CHI

## Client Sample ID: ECH-G-AREA D PIPE DIS

Lab Sample ID: 500-52363-4

Date Collected: 11/14/12 13:30

Matrix: Water

Date Received: 11/14/12 15:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			169906	11/15/12 15:00	RL	TAL CHI
Dissolved	Analysis	6010B		1	170303	11/19/12 14:33	TDS	TAL CHI
Dissolved	Analysis	6010B		10	170303	11/19/12 16:07	TDS	TAL CHI

**Laboratory References:**

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Certification Summary

Client: URS Corporation  
 Project/Site: Storm Pipe Sampling 2012

TestAmerica Job ID: 500-52363-1

## Laboratory: TestAmerica Chicago

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alabama	State Program	4	40461	04-30-13
California	NELAC	9	01132CA	04-30-13
Georgia	State Program	4	N/A	04-30-13
Georgia	State Program	4	939	04-30-13
Hawaii	State Program	9	N/A	04-30-13
Illinois	NELAC	5	100201	04-30-13
Indiana	State Program	5	C-IL-02	04-30-13
Iowa	State Program	7	82	05-01-14
Kansas	NELAC	7	E-10161	10-31-13
Kentucky	State Program	4	90023	12-31-12
Kentucky (UST)	State Program	4	66	04-11-13
L-A-B	DoD ELAP		L2304	01-06-13
L-A-B	ISO/IEC 17025		L2304	01-06-13
Louisiana	NELAC	6	30720	06-30-13
Massachusetts	State Program	1	M-IL035	06-30-13
Mississippi	State Program	4	N/A	04-30-13
North Carolina DENR	State Program	4	291	12-31-12
North Dakota	State Program	8	R-194	04-30-13
Oklahoma	State Program	6	8908	08-31-13
South Carolina	State Program	4	77001	04-30-13
Texas	NELAC	6	T104704252-09-TX	02-28-13
USDA	Federal		P330-12-00038	02-06-15
Virginia	NELAC	3	460142	06-14-13
Wisconsin	State Program	5	999580010	08-31-13
Wyoming	State Program	8	8TMS-Q	04-30-13

**Chicago**

2417 Bond Street

University Park, IL 60466  
phone 708.534.5200 fax 708.534.5363

**Chain of Custody Record**

**TestAmerica**

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact Wanda Davis - URS Corp. ADQM		Project Manager: Randy Palachek Tel/Fax: 512.719.6006		Site Contact: Keith Thompson		Date: 11/14/12		COC No: 500-52363	
Iron Hill Corporate Center, 4051 Ogletown Road, Suite 300 Newark, DE 19713 (302) 781-5892		Analysis Turnaround Time Calendar (C) or Work Days (W) TAT if different from Below _____ <input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Lab Contact: Richard Wright		Carrier: TA Courier		1 of 1 COCs	
Project Name: <del>Water Sampling</del> <b>Storm Pipe Sampling 2012</b>		Site Location: DuPont East Chicago, Indiana		PO#: LBIO-66421, Client Project#: 9267-7720100C-WHO6507754		Job No.		SDG No.	
Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	Total Metals (See List Below)	Sample Specific Notes:	
ECH-G-AREA D POOL	11/14/2012	9:15	Grab	Water	1	N	X		
ECH-G-AREA D POOL DIS	11/14/2012	9:15	Grab	Water	1	Y	X		
ECH-G-AREA D PIPE	11/14/2012	13:30	Grab	Water	1	N	X		
ECH-G-AREA D PIPE DIS	11/14/2012	13:30	Grab	Water	1	Y	X		
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____									
Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/>						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months			
Special Instructions/QC Requirements & Comments: Analyze for the following metals: Aluminum, Antimony, Arsenic, Barium, Boron, Cadmium, Calcium, Chromium, Cobalt, Iron, Lead, Magnesium, Nickel, Potassium, Selenium, Silicon, Sodium, Titanium, Vanadium, and Zinc.									
Relinquished by:	Company: Parsons	Date/Time: 11/14/12 1500	Received by:	Company: TA	Date/Time: 11-14-12 14:42				
Relinquished by:	Company: TA	Date/Time: 11-14-12 1535	Received by:	Company: TA-CEE	Date/Time: 11/14/12 1535				
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:				

## Login Sample Receipt Checklist

Client: URS Corporation

Job Number: 500-52363-1

**Login Number: 52363**

**List Source: TestAmerica Chicago**

**List Number: 1**

**Creator: Scott, Sherri L**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	